

CAMPUS TECHNOLOGY

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November 2005 \$9

Tulane
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COLUMBIA

How recovery planning
is helping Louisiana colleges
come back from disaster

COMING BACK SMART

- DB Marketing Mavericks!
- Campus/Vendor Partnering
- Network Innovation Models

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Sony Service Pack 2-year, 9 x 5, onsite warranty upgrade
\$198.50 (CDWG 777927)



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Recommended accessories and services:
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ThinkPlus port replicator \$149 (CDWG 461019)

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Toshiba Services 3-year accidental damage protection \$165 (CDWG 289266)



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Convergence. Mobility. Security.



Not Now, I'm IM-ing

Students 'converse' under the radar during class, and now disabling bot-borne viruses threaten entire campuses.

In late September, the **University of Maryland** was hit hard by one of the worst computer virus infections to hit higher education in recent memory. What made the outbreak more devastating than usual was the fact that it arrived on the back of an insidious little carrier known as the SDbot, quickly disabling student computers by posing as a friendly AIM message link ("LOL, ha, check this out") from an IM-ing buddy. Campus CIOs across the country got the news within hours, and shuddered: With the expansion of mobility and converged networks and devices (laptops, PDAs, and cell phones) their work had simultaneously become transcendent and a descent into campus security hell.

Yet, campus faculty have been grappling with other serious IM-related issues for some time now, not the least of which is the challenge of teaching a class while, under the radar, instant- and text messages fly low like stealth bombers. In recent months, we have reported on various methods used by aggravated teachers, professors, and technologists to thwart the silent chatter during class time. Some of those approaches have included a) creating wireless "dead zones" (students attempting to surf the Net or IM a friend find that—drat!—their wireless capability is mysteriously disabled every time they head to Don't Try That Here 101), or b) simply ruling that cell phones be turned off and laptops be closed.

The problems with the latter approach are obvious: Cell phones can still vibrate, and forcing students to shut their electronic notebooks sends them back to the archaic kind (and then

what's the good of *having* a laptop?). The problem with the more sophisticated dead zone approach is also clear: Must we now confound our ubiquitous mobility efforts (and add to the sizable dollar and man-hour investment) by *disabling* them everywhere kids can't stop passing electronic notes to each other?

Possibly the most creative approach is the one I heard recently (though it takes me back to memories of my third-grade teacher rapping me on the knuckles with a ruler when she caught me whispering to a classmate): At one institution of higher learning, a fed-up professor has become savvy enough to use the classroom WLAN to access various students' laptop screens during class. He now surreptitiously "flashes" random desktops (complete with any IM activity) onto the bigger screen in front of the room, for all to see. One can only imagine the chagrin of Mary, in row 3, seat F, as she spies her instant message to her buddy two seats down—"r u as bored as i am?"—displayed to all.

The message here is twofold. One: campus technologists will have to become increasingly adept at not only thwarting but preventing the spread of viruses that move through AIM and the networks that connect wireless and cellular devices. And two: higher ed faculty—whether they like it or not—are going to have to get wireless-savvy fast, if they are going to have any hope of keeping up with a worldwide student population that just can't stop yakking across the ethersphere. **CT**

—**Katherine Grayson, Editor-in-Chief**
What have you seen and heard? Send to: kgrayson@101com.com.

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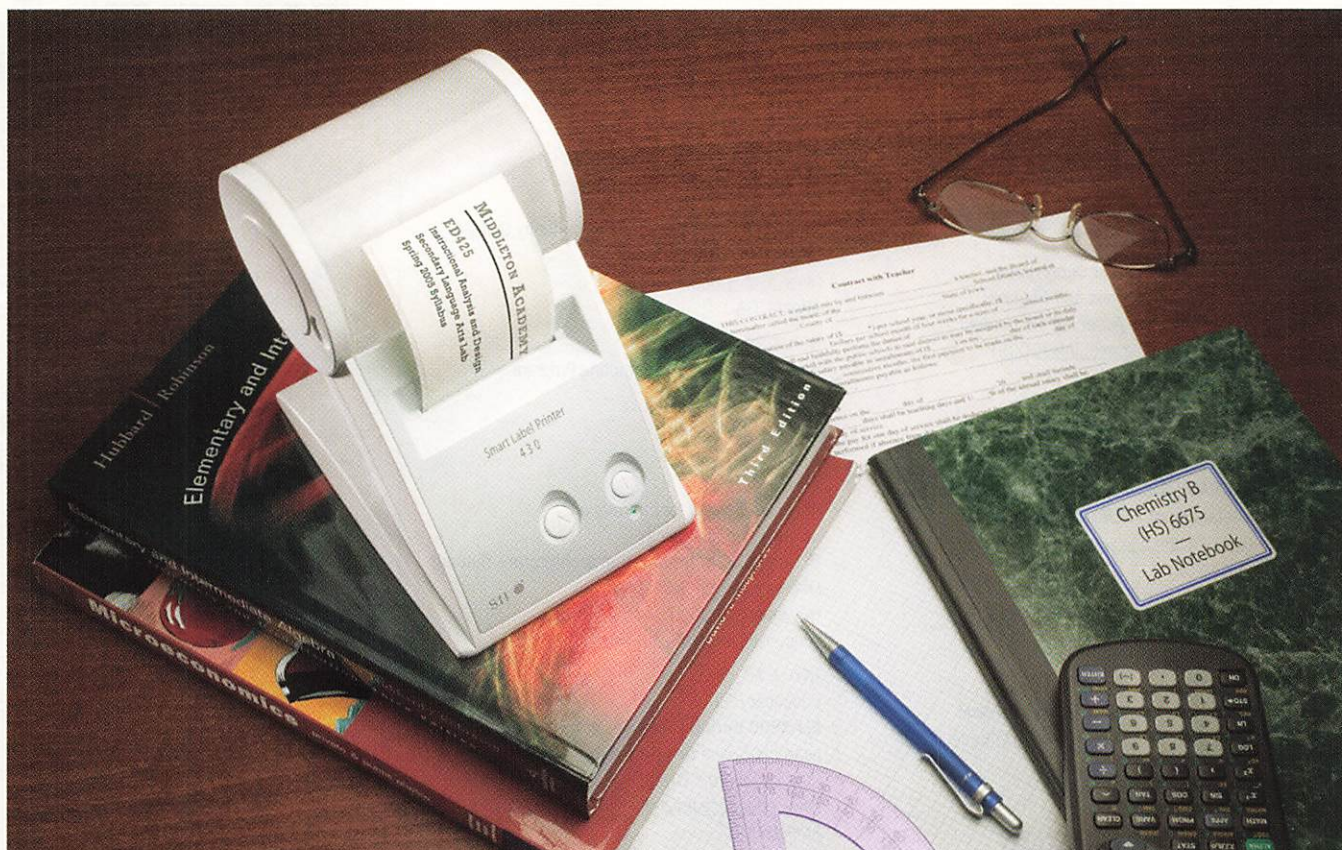
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UPCOMING EVENTS

November 2005

NOV 2 - 5

WCET's 17th Annual Conference
*E-Learning E-LLusions and Triumphs:
Reimagining the Academic Ecosystem*
(www.conference.wcet.info/2005)
San Francisco, CA

NOV 13 - 16

American Association of Collegiate Registrars
and Admissions Officers
**AACRAO's 15th Annual Strategic Enrollment
Management (SEM) Conference**
(www.aacrao.org/sem15)
Chicago, IL

December 2005

DEC 7 - 9

Eduventures
Competing in Higher Education-West
(www.eduventures.com/events/chewest.cfm?pubnav=conferences)
Los Angeles, CA

January 2006

JAN 4 - 7

Council of Independent Colleges
CIC 2006 Presidents Institute
(www.cic.org/conferences_events/presidents/2006.asp)
Naples, FL

JAN 8 - 11

The Association for Communications Technology
Professionals in Higher Education
2006 ACUTA Winter Seminar
(www.acuta.org)
Palm Springs, CA

JAN 9 - 13

Macworld Conference and Expo
(www.macworldexpo.com/live/20/events/-20SFO06A)
San Francisco, CA

February 2006

FEB 18 - 22

National Association for Campus Activities
2006 NACA National Convention
(www.naca.org)
Boston, MA

March 2006

MAR 5 - 8

College and University Professional Association
for Human Resources
CUPA-HR National Seminar
(www.cupahr.org/conferences/seminar/nationalseminar.html)
Washington, DC

MAR 19 - 22

League for Innovation in the Community College
Innovations 2006
(www.league.org)
Atlanta, GA

MAR 20 - 22

North East Regional Computing Program
NERCOMP 2006
(www.nercomp.org)
Worcester, MA

MAR 23 - 27

American Society for Information
Science and Technology
IA Summit: 7th Information Architecture Summit
Learning, Doing, Selling
(www.iasummit.org)
Vancouver, British Columbia

MAR 29 - 30

Educause/ELI
ELI 2006 Spring Focus Session
*Learning Space Design: Integrating the
Physical and the Virtual*
(www.educause.edu/eli)
Adelphi, MD

MAR 29 - APR 1

National Association of Campus Card Users
13th Annual Conference
(www.naccu.org)
San Diego, CA

April 2006

APR 17 - 20

American Association of Collegiate Registrars
and Admissions Officers
AACRAO 2006 Annual Meeting
Riding the Waves of Change
(www.aacrao.org)
San Diego, CA

APR 30 - MAY 5

Interop Las Vegas 2006
(www.interop.com)
Las Vegas, NV

May 2006

MAY 10 - 16

SysAdmin, Audit, Network, Security
SANS Security 2006
(www.sans.org)
San Diego, CA

>> For more events, go to:
www.campus-technology.com/events

>> To submit your event
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CAMPUS TECHNOLOGY

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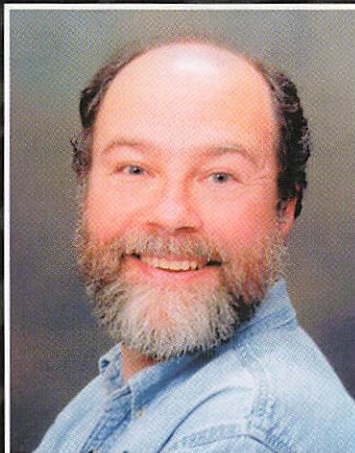
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Ed Carryer is the Director of the Smart Product Design Laboratory at Stanford University.

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Standing in Room 551 of the Terman Engineering Center at Stanford University, Professor Carryer is preparing to deliver another lecture on the finer points of Mechatronics to a full audience. He's equipped with a Toshiba Protégé 3505 PC tablet preloaded with a PowerPoint file full of a mix of prepared and blank slides, his microphone headset is on, and the overhead LCD screen shines bright. One hour and fifty minutes later, time's up. The lecture is over, but not lost. Camtasia Studio has recorded the entire lecture, Professor Carryer's audio, the questions, and all the complex annotations he has written on the slides since the lecture started. Later that same day his students will be able to watch and listen to it again as it streams online and on demand, wherever and whenever.

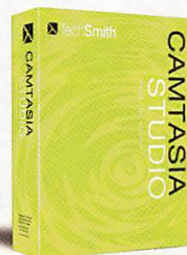
Increasingly, this is becoming a very common scenario in institutions of higher learning all over the world.

"There comes a point when your lecture style becomes very familiar and comfortable, and something the students get used to. The technology solutions we tried in the past interrupted my lecture style. I was adjusting for the technology instead of the technology fitting my style. This is a very important point because we want to be able to provide our students with the best possible learning resources. We also want our lectures to go smoothly and they need to be free-flowing so that means Camtasia needs to record my live lecture in real-time, which it does. It's very efficient and it's great to be portable. I can teach in any lecture hall on campus this way."

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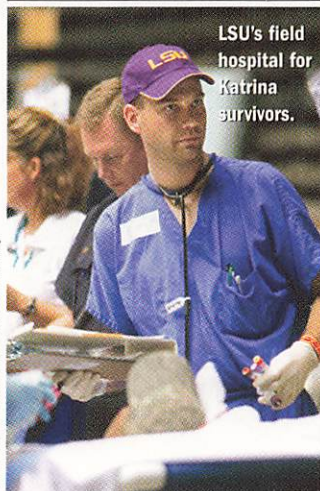
CAMPUS

TECHNOLOGY HAPPENINGS IN HIGHER EDUCATION

Briefs

NEWS ■ RINGING IN THE DATA. “Where’s that campus shuttle bus?” “Will I be able to get a washing machine this morning?” “What did Dr. Brown say about the sculpture I’m looking at, here in the campus quad?” The answers to these and other pressing questions may be just a few PDA-clicks away, anytime, anywhere, at least for a group of students on the campus of **Wake Forest University** (NC). Through MobileU, a pilot program launched this term, CIO Jay Dominick and colleagues will test the use of converged Pocket PC/cell phones with about 100 students and staff. Their investigation spans academic, work, and lifestyle issues as they study the control features, messaging functions, and information access capabilities of the mobile devices, loaded with specialized and location-based applications. Dominick expects to have some initial data from the project in December. ■ **VERY BERRY MOBILE.** In a similar effort, the Center for Human Capital, Innovation, and Technology at the **University of Maryland** is analyzing how students at the university’s Robert H. Smith School of Business are using their Sprint Nextel (www.sprint.com) BlackBerry phones. All full-time MBA students have been equipped with the devices since the fall of 2004, and use them for team projects, e-mail, and voice communications—including the “walkie talkie” function for quick connection with their peers. ■ **LEADING ENTREPRENEURSHIP.** The College of Engineering at **UC-Berkeley** (CA) has launched its Center for Entrepreneurship and Technology, an academic and industry partnership to foster technology transfer, commercialization, and startup ventures. ■ **SHINE ON THE COMPETITION.** College and university teams from around the world competed in the US Department of Energy’s Solar Decathlon this fall, each designing, building, and transporting an entire solar-powered house to be displayed for 10 days in a “solar village” on the National Mall. **PEOPLE ■ UCLA CHANCELLOR PLANS TO STEP WHERE?** Albert Carnesale, UCLA chancellor since 1997, has announced plans to leave his post as chancellor and focus on teaching, public policy, and international affairs after a sabbatical leave

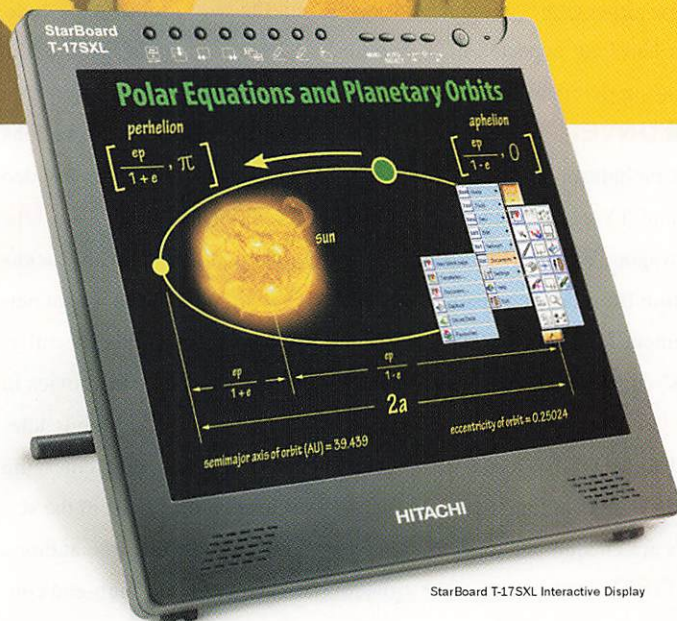
URGENT RESPONSE



LSU's field hospital for Katrina survivors.

which begins in June 2006. Carnesale holds professorial appointments in UCLA’s School of Public Affairs and the Henry Samueli School of Engineering and Applied Science, is a member of the American Academy of Arts and Sciences and of the Council on Foreign Relations, and is a lecturer and author. A news release on UCLA’s Web site, detailing Carnesale’s extremely active professional career, leads us to believe that “step down” is a misnomer. ■ **LSU IT EXEC REFLECTS ON DISASTER RECOVERY.** With the opening of the academic year, **Louisiana State University** suddenly found itself playing a critical role in the emergency response to victims of the gulf region’s most disastrous hurricane. University resources, including IT, were quickly summoned to help set up what was probably the largest acute care field hospital ever established on US soil—800 beds—along with communications and other facilities for various agencies with temporary operations on the campus. LSU’s experience makes a good point for campus DR planning. “What if you’re the last ones standing?” posed CIO Brian Voss, in communication with CT reporters shortly after Katrina’s passing. (See cover story, page 30, and Stats, page 14, for more on DR planning. Follow our higher-ed-related coverage of Katrina’s aftermath on CT’s Web site, www.campus-technology.com.) **CT**

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INDUSTRY

WHAT'S HAPPENING IN TECH SECTORS

Briefs

NEWS ■ BIG NEWS: BLACKBOARD AND WEBCT TO MERGE. As the news of the \$180 million Blackboard (www.blackboard.com) and WebCT (www.webct.com) "agreement to merge" hit the wires, folks in the community were split: some were shocked, while others had long expected it. According to Blackboard spokespeople, the two companies will become a single company, with a single client base and shared resources. The agreement to merge should be finalized late this year or in early 2006. ■ **UNVEILING OF THE NEW IPOD.** Apple CEO Steve Jobs introduced a new Apple (www.apple.com) iPod that includes a 2.5-inch color screen (for photos and artwork), a video player (for podcasts, music videos, home movies, and TV shows), and can hold up to 15,000 songs. ■ **DIGITAL HOLLYWOOD.** Hopping on the on-demand bandwagon, Warner Home Video (www.dvdbw.com) teams with Ruckus Network Inc. (www.ruckusnetwork.com) to offer feature films and television series episodes on digital entertainment networks via Ruckus campus installations. The agreement between the two companies will supply high-quality, fully-licensed digital movies delivered straight to students' computer screens. Additionally, instructors can use the movies in the classroom for instructional purposes. ■ **THE FUTURE OF MOBILE COMMUNICATIONS.** Mobile telecom giant Motorola (www.motorola.com) has launched MOTOFRD, a nationwide competition challenging emerging innovators to express—via words or visually—how they envision seamless mobility in the future. Students from the science, technology, engineering, media, and arts fields are encouraged to submit an entry. Researchers, futurists, authors, and others will judge entries. ■ **3, 2, 1... BLAST OFF!** Crestron (www.crestron.com), manufacturer of high-end control and automation solutions, has approved the launch of a new and improved Web site. The company has reorganized the content on the site to include tech specs, product information, streaming media, and more. According to Crestron spokespeople, visitors are now able to navigate more easily through the site. **M&A, ETC. ■ CATCH THE NEWS**

NEW LMS CPO



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TODAY? ABC News International (www.abcnnews.go.com) and Thomson Higher Education (www.thomson.com) have teamed up to offer historic, raw news footage and video programming to higher ed. The news footage and clips will be integrated into Web sites, eBooks, DVD, VHS, CD-ROM, iPod, and PDA study aids for college classrooms. Video programs include *World News Tonight*, *Good Morning America*, *This Week*, *Prime Time Live*, *20/20*, *Nightline*, and others. ■ **PREMIUM CMS.** Collaboration and enterprise portal provider Unicon Inc. (www.unicon.net) has teamed up with RedDot Solutions (www.reddot.com), an enterprise content management company, to provide a combined CMS solution. The partnership of RedDot's CMS and Unicon's Academus portal will give customers a customized eLearning experience (built on the uPortal open source technology) from within one interface. **PEOPLE ■ CPO EXEC MOVES FROM PEARSON.** Angel Learning (www.angellearning.com), developer of enterprise learning management systems, has appointed Raymond P. Henderson as its new chief products officer. Formerly Pearson ed technology development prez, Henderson will "leverage his extensive experience in the education industry and his passion for creating innovative educational products to lead the marketing and development of the Angel Learning Management Suite of products," say Angel spokespeople. **CT**

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Lessons in Disaster

In the wake of Katrina, post 9/11, higher ed weighs in on DRP and communications.

From Importance, to Plan

Following 9/11, the Campus Computing Project's (www.campuscomputing.net) annual survey of higher education institutions folded three key questions on disaster recovery planning (DRP) into its laundry list of concerns for IT. The first was, "Does your institution have a strategic plan for IT disaster recovery?" Little more than half (55.5%) of all institutions responding could answer "yes" in the 2004 survey, up only 2.5 points from the 2002 data. But roughly another third (32.3%) claimed to have plans in the works, leaving only 12.2% admitting to no planning at all.

A second DRP-relevant question was included in a rating of several elements of IT infrastructure. On a poor-to-excellent scale of 1 to 7, disaster recovery planning earned a respectable medium score of 4.4, but it still didn't do as well as most other items. In the listing of 13 items rated, only eCommerce and the campus portal scored lower.

A look at the third query about disaster recovery may shed the most light on where we are relative to where we should be. In a section on "Web and Networking Issues," a question probed how important disaster recovery is in discussions about and planning for networking on the institution's campus. From "not important" to "very important," (1 to 7) disaster recovery scored a 5.8—pretty high on the scale, considering that almost half the institutions responding to the survey didn't have strategic DRP in place for IT. Will this sense of importance actually spawn strategic plans? We're waiting for the Campus Computing 2005 data to be released, which might show more activity in disaster recovery planning for IT as an institutional priority. But with the punch packed by Katrina, the real change may be reflected in the 2006 survey.

A Case for Communications

There are few times when communications are more critical than in a disaster scenario. Calling hurricane Katrina a "study in online crisis management," Ballardvale Research (www.ballardvale.com) wanted to find out how US colleges and universities communicated with their constituencies regarding the disaster. One week after Katrina hit, the Massachusetts-based IT analyst firm reviewed the Web sites of the top 15 national universities plus the top 15 liberal arts colleges as identified by *U.S. News &*

World Report. They found a range of approaches, which their analysts have categorized as standard, best, and worst practices.

While Ballardvale's study reveals several different approaches taken by higher education institutions, one of the most striking differences is between those Web sites that simply "broadcast" information about Katrina and those also offering interactive elements like blogs and message boards—a big factor in setting the best practices apart from the standard. Ballardvale concluded that institutions should consider "breaking the normal Web site mold" in a time of crisis or disaster, and be ready to set up mini-sites and special blogs or other interactive forums. Another strong recommendation is to avoid the worst practice of ignoring or seeming mostly oblivious to disasters—whether they strike your institution directly or not. (To read the full report, go to www.ballardvale.com/research.htm.) **CT**

KATRINA AND THE WEB

	Worst Practices	Standard Practices	Best Practices
Viewpoint	"Katrina didn't affect us."	"We shouldn't publicly discuss Katrina's impact."	"We need to help all of our constituencies—students, faculty, staff, and alumni—deal with Katrina."
Strategy	View Katrina as not impacting the educational mission.	Deal with Katrina within established processes and Web site design.	Treat Katrina as a crisis that impacts the overall college community and urge people to think "outside the box."
Process	Standard Web site content and processes remain.	Broadcast generated and received information.	Employ interactive information gathering/receiving.
People	No focus on mobilizing people.	President & Office of Public Affairs issue statements.	Many departments and constituencies are involved.
Technology	No mention of Katrina, or a difficult-to-find hyperlink on the home page.	A mention of Katrina on the home page and a Katrina mini-site.	Blogs and message boards help constituents distribute information in real time.

COLLEGES AND UNIVERSITIES used the Web in a variety of ways to communicate with their constituencies about Katrina. (From "Online Crisis Management: 30 Top Colleges/Universities Respond to Katrina," by Ballardvale Research. Used with permission.)



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how higher education does business.

Trend Report: Identity Management

In this latest update on "Everything You Need to Know About IdM," columnist Doug Gale lays out the old, the new, and the soon to be must-haves.

INCREASINGLY, A HIGHER EDUCATION

institution's ability to provide services over the network depends on its ability to authenticate, authorize, and provision user access rights in a unified, consistent, straightforward, and effective way. That's easy to say but devilishly hard to do, and far too complex to cover in a single column!

Still, as we wade into this Byzantine morass of identity management (IdM), it helps to remember that there are four underlying components:

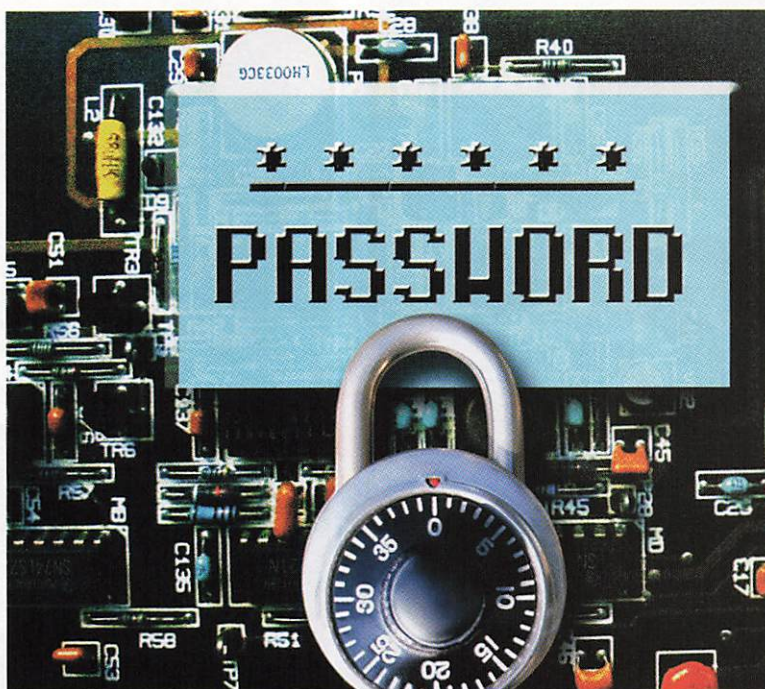
- ▶ Identification (your name or network/system identifier)
- ▶ Authentication (proof you're you)
- ▶ Authorization (what resources you have permission to access)
- ▶ Directory (information about you and what you are allowed to do)

For now, let's look at the first two: identification and authentication. Future columns will consider authorization and directory services.

Identification

At the heart of these schemes is how individuals are identified. Over time, single names evolved into first and last names, and more recently, into unique identifiers such as the Social Security Number (SSN). Unhappily, the use of SSNs as identifiers in higher ed creates identity theft and privacy problems, and does not easily adjust to our international community. We're left with the need for a unique identifier or name.

A unique identifier is more than just a long string of numbers (see box, page 18). For example, at **Indiana** and **George Mason** (VA) universities, each student is assigned a unique and persistent multidigit identifier (used by the student information system), as well as a unique but easier to remember eight-character network ID and password that can be mapped back to the longer multidigit identifier. Defining a unique identifier is often a politically contentious process.



Authentication

Authentication (AuthN) is used to prove in some fashion that an individual is who he says he is. We can categorize that proof in three ways: something you *have* (e.g., a key or a birth certificate), something you *know* (a password), or something you *are* (e.g., your fingerprints). (See "Security: It's Not All About Hackers," *Campus Technology*, September 2005.)

The higher education environment involves multiple authentications: A student must prove her identity when she first enrolls. This is usually done by the admissions or registrar's office, and is normally based upon a series of documents (such as high school transcripts) that the student sends the institution. Some institutions are beginning to require arriving students to show a picture ID, although that creates problems in enrolling distance ed students, and may not be any more secure than the traditional process.

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Jack Suess, vice president for Information Technology at the **University of Maryland-Baltimore** and co-chair of the Educause/Internet2 Security Task Force, recommends the identity proofing standards developed by the federal government as being both quantitative and flexible. The government's E-Authentication Web site can be found at www.cio.gov/eaauthentication.

Subsequent online authentication uses one or a combination of three general approaches: password strategies, single sign-on strategies, and public key encryption (PKI) strategies. Password authentication is the oldest of the three schemes and must be considered a legacy strategy if used by itself. Single sign-on strategies such as Web initial sign-on (WebISO) and Kerberos are currently popular, while PKI is an emerging technology that may soon become more important.

Password Authentication

Historically, a user is given or selects a semi-secret ID (e.g., jsmith5; a first initial, last name, and a digit) and a secret password, which is then used to log on to a computer or network. The problem of lost or stolen IDs and passwords is commonly addressed by requiring something you *have* or something you *are*, in addition to something you *know*. This two-factor authentication can be as sophisticated as the products discussed in my September 2005 column, or as simple as the ingenious system developed by Entrust (www.entrust.com), in which each user has a small printed card containing a unique 5x10 (5 rows x 10 columns) "bingo card" matrix. When a user logs on, he is challenged by the system to respond with the value in a particular row and column.

Single Sign-On Strategies

Another problem with password authentication is that, in many cases, if the user or the application the user is running wants to access an app on another computer or server on the network, the original host system asserts to the second system that its user is who she says she is. By analogy, this would be like posting a guard at the door to a bank where patrons must have valid passwords to enter, but after they are inside, they can go up to any teller and withdraw money from an account by just saying that it's theirs. Security by assertion leaves a lot to be desired, but it can be avoided by requiring each user to have a separate password for each application or resource. Of course, this results in users having dozens of passwords, and is so user-hostile that users resort to a printed list of passwords or the use of a common password for everything—thus undermining the security of the whole system. A number of strategies have been developed to allow a user to log on to a network once and reach multiple applications, while preserving the integrity of those applications.

Kerberos. In the case of Kerberos (developed at MIT and used widely in higher ed), the user enters a secret password

► Institutional Identity and Authentication Checklist

How far do you need to go to achieve true IdM and AuthN?

- ☐ Does everyone associated with your institution have a unique identifier with the following characteristics?
 - ▶ It is unique within the largest population set in which it is used.
 - ▶ It is not a SSN or other identifier that can be used in identity theft or other ways that violate individual privacy rights.
 - ▶ It is simple enough for people to remember.
 - ▶ It is scalable, if your population set increases.
- ☐ Has your institution implemented a single sign-on authentication strategy that provides appropriate levels of security for multiple applications?
- ☐ Does your institution have a process for investigating, testing, and adopting emerging authentication technologies such as PKI and federated identity management schemes (e.g., Shibboleth)?

or PIN to initially sign on to a computer or network. Yet, before he can access another computer or resource on the network, a more complex scheme ensures that the system asking for access in the name of John Doe really *is* John Doe's system. Authentication by assertion is not allowed. Using the previous analogy, this would be like having the guard at the bank verify that the patron has a valid password, then escort the patron to the teller's window where the guard informs the teller that the patron is who she purports to be. While the scheme is no better than the security provided by the initial logon password, it does ensure that this level of security is extended throughout the system. An excellent tutorial on Kerberos (the basis for many higher ed authentication schemes) may be found at www.isi.edu/~brian/security/kerberos.html. Find complete technical specs at web.mit.edu/kerberos/www.

Pubcookie. Pubcookie is open source technology developed by the **University of Washington**, which provides WebISO. When a user points her Web browser at a Pubcookie-enabled app that requires authentication, the Web browser is redirected to the Pubcookie login module on a trusted, secure server. The Pubcookie login server authenticates against an existing enterprise authentication service such as Kerberos, and returns a cookie to the user's computer. Then the user's browser is redirected back to the application server. As the user subsequently visits different servers within the enterprise, the cookie will serve as acceptable authentication until the cookie expires. (Go to www.washington.edu/computing/pubcookie and www.pubcookie.org.)

Yale Central Authentication Service (CAS). CAS, developed by **Yale University** (CT) to provide a "pretty good" unified system of access to all Web-based resources, now forms the basis for systems at several universities and can be obtained at www.ja-sig.org.

Federated Authentication. Shibboleth is a national higher education initiative funded by the National Science Foundation (www.nsf.gov) and facilitated by Internet2 (www.internet2.org), to develop an open, standards-based way to authenticate between campuses. The user's campus authenticates the user and then identifies him to other campuses

through a "trust fabric" (shibboleth.internet2.edu/index.html). Adoption of Shibboleth has been very slow, largely because so few institutions have a mature campus trust fabric.

PKI Authentication

Finally, the Holy Grail of authentication—PKI. PKI provides a level of authentication akin to having both the guard at the door of the bank and the teller ask for a driver's license, passport, and fingerprints before any transaction. But PKI hasn't yet been widely adopted in higher ed largely because the technology is seen as complex and requiring substantial back-room support, either from a knowledgeable staff or an expensive vendor. Educause has developed the *Identity Management Services Program* (www.educause.edu/imsp) to take advantage of discounted pricing and customized purchasing from vendors such as VeriSign (www.verisign.com). Still, Jeff Schiller, network manager at MIT (one of the few institutions to fully implement PKI), argues that the primary reason for the perceived complexity and expense of PKI is that institutions don't keep the implementation simple.

Trends and Next Steps

The general trend is from weak to strong authentication. Two-factor authentication for key administrative applications and single-sign-on authentication for just about everything is becoming the norm. Federated authentication and PKI are just around the corner.

So, how does *your* institution get to strong authentication from weak authentication? Some institutions have elected to use an external vendor such as Cybertrust (www.cybertrust.com), Sun Microsystems (www.sun.com), or VeriSign to provide products/systems integration. In addition to cost, one of the challenges to this strategy is the integration of a vendor's system with the plethora of campus apps (e.g., Blackboard, www.blackboard.com; and Datatel, www.datatel.com.) Other institutions have elected to develop services and software internally, using open software. Most use a mix of both strategies. For example, Indiana University uses the Microsoft Identity Integration Server (www.microsoft.com) as a back end for account generation, and then uses the Yale Central Authentication Service and uPortal (www.uportal.org) open source software on top of Kerberos. Similarly, the **University of Miami School of Medicine** and George Mason University use Edgework from Vernier Networks (www.verniernetworks.com) to identify connected machines by their Message Authentication Code (MAC) address, and scan installed software to ensure adherence to institutional policies before connecting the computer to campus applications—in effect, providing two-factor authentication (the user password and the computer itself). The moral: One size doesn't fit all. **CT**

Doug Gale, president of Information Technology Associates, LLC (www.itassociates.org), has more than 30 years as a faculty member, CIO, and research administrator.

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Network Innovators

Two innovative institutions move toward 21st-century networking and create models for other colleges and universities to pursue.

WHEN IT COMES TO NETWORKING, everything is new under the sun—at least, to colleges and universities looking for new ways to expand and enable connectivity on campus and beyond. For the two universities profiled here, new technological advances, groundbreaking Internet service providers, and thinking past the immediate curve were key.

Innovation: Forging a Super-Powered Converged Network

Innovator: Florida International University

Interviewees: John P. McGowan, CIO and VP for Information Resources; Al Losada, director of Enterprise Technology and Support

System and services background. FIU operates the Miami-based AMPATH GigaPOP, a major point of presence for traffic to and from Latin America and throughout the Caribbean. [Editor's note: The Webopedia (www.webopedia.com) defines GigaPOP as follows: "Short for gigabit Point of Presence, a network access point that supports data transfer rates of at least 1 Gbps. Currently, only a few gigaPOPs exist, and they're used primarily for accessing the I2 network. Each university that connects to I2 must do so through a gigaPOP, which connects the university's LANs and WANs to the I2 network. Originally, 12 gigaPOPs were planned, each one serving half a dozen I2 members, but the number of gigaPOPs is likely to grow. Whereas the POPs maintained by ISPs are designed to allow low-speed modems to connect to the Internet, gigaPOPs are designed for fast access to a high-speed network, such as I2.] GigaPOP partners of FIU include CERN (the European Organization for Nuclear Research, in Switzerland), the University of Illinois-Chicago, California Institute of Technology, and the University of São Paulo (Brazil). Petabytes of data from astronomical observatories and high-energy physics research projects comprise some of the bandwidth-intensive traffic into and out of the GigaPOP.

FIU also boasts a very robust internal campus network that carries converged voice and data traffic including uni-



Courtesy of FIU Publications

AT FLORIDA INTERNATIONAL University, a grid of faculty computers revs up research.

fied messaging (combined voicemail and e-mail). It has a university-wide VoIP system and operates a 12-seat Cisco Systems (www.cisco.com) IPCC Express call center that takes 100,000 calls per year. The call center began life providing technology help desk services, utilizing BMC Remedy software (www.remedy.com). It was recently expanded to include enrollment support to better respond to student needs.

Network as the Great Enabler for Faculty and Students. So, how does this infrastructure benefit faculty and students? One way is via the creation of an on-campus grid of faculty computers to apply enhanced processing to collaborative research projects that need teraflops (measures of computer speed expressed as "a trillion floating point operations per second") of processing power. The grid is also being extended to programs in biology, including a biodiversity project in Panama, and a partnership with the University of Kansas. But FIU also plans to virtualize edu-

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cation in the classroom through collaboration with other colleges and universities, allowing professors and students at multiple sites to work as though all in one classroom. CIO John McGowan anticipates the College of Business' International Business Program will be among those to take advantage of this opportunity.

At the same time, FIU hasn't left behind its local constituents. Partly through funding provided by the National Science Foundation (www.nsf.gov), the university provides outreach to greater-Miami-area high school science teachers and students who can work on collaborative real-time applications with university faculty.

Lessons learned. Enterprise Technology and Support Director Al Losada admits that all of this didn't happen without some pain. Fortunately, University Technology Services (UTS) looked at the initiative not as a technology project, but as a *university* project. UTS involved the entire community in the planning, including recruiting advocates

cle.com) project that is about to begin. However, like many colleges and universities, FIU makes extensive use of its own students' brain power and know-how.

Innovation: Building a Campus/Vendor Partnership for Bandwidth and Resale

Innovator: University of Pennsylvania

Interviewee: Michael Palladino, associate vice president of Networking and Telecommunications

System and services background. Like FIU, the University of Pennsylvania also hosts a GigaPOP known as MAGPI (Mid-Atlantic GigaPOP in Philadelphia for Internet2). By one means or another, nearly one-third of the K-12 school districts in Pennsylvania are connected to MAGPI, as are other higher ed institutions such as Princeton (NJ) and the University of Delaware.

The Penn connection to Internet2 supports international high-speed video conferencing, distributed and online health

“ In addition to its Internet2 connectivity, UPenn resells commercial Internet services to tri-state non-profits. ”

from various departments to interface with their users. This made the project a positive experience rather than an invasive one, say those involved.

The university also performs a return on investment (ROI) analysis for every new project under consideration, to ensure that total cost of ownership (TCO) is accounted for. That's partly what drove the VoIP implementation, say McGowan and Losada. The cost of the initial campuswide VoIP system was recovered within about two years, due largely to the ability to replace Centrex lines (costing \$26 per line per month) with the new system (about \$5 per line per month). There were also some savings in consolidation of services among multiple campuses. The main campus now provides many functions remotely that previously required onsite equipment and/or personnel.

Planning and staffing. The planning group also spent considerable time thinking about what a converged network would mean, and therefore decided to meld its telephone, networking, and operations groups organizationally *before* it tackled the physical infrastructure. Losada notes, "We had to artificially create that environment at first, but it's now a natural thing that the teams work together." Virtual teams are assigned for new projects, including members from the video/multimedia group.

Outside consultants are occasionally used for specific tasks or projects, and FIU did hire a project manager especially for the VoIP implementation project. The university also plans to outsource an Oracle/PeopleSoft ([care, bridging of K-12 to higher ed, and regional workforce development. One example of a supported project is the on-campus General Robotics, Automation, Sensing, and Perception \(GRASP\) Lab, which is a multi-disciplinary research laboratory. A few of the major research thrusts in the GRASP laboratory include three-dimensional reconstruction of environments for use in immersive environments, development of assistive devices for people with disabilities, the design of novel sensors for vision and perception, and modeling and control of biological systems.](http://www.ora-</p>
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In addition to its Internet2 connectivity, Penn also has become a reseller of commercial Internet services (Internet1) to non-profit organizations in the tri-state area. By aggregating traffic at its site, Penn is able to purchase huge amounts of service and make pieces of it very affordable for its partners/subscribers on a cost recovery basis.

Challenge and fulfillment. Fortunately, Associate Networking and Telecom VP Michael Palladino foresaw years ago the need to provide a large conduit to the Internet. When he realized that "even" a T3 (45Mbps) circuit wasn't going to fulfill the university's needs, he sought other avenues. At the time, multinational Tier 1 Internet service provider Cogent Communications (www.cogentco.com) was offering a revolutionary idea connectivity in 100Mbps increments at \$10 per megabit. Palladino was skeptical, as the offering seemed too good to be true, but he decided it was worth a shot and initiated Cogent service with a link to the Penn campus at 100Mbps. Within six months, he found that it was saturated.

How to Create Video Lectures in 60 Minutes or Less

The use of the bandwidth grew exponentially, pushing Penn to upgrade to a full gigabit connection. Because the university has a leased dark-fiber (previously idle fiber-optic cable) link to the telecom hotel (a building constructed or rebuilt for data centers; an Internet data center) in Philadelphia and uses wavelength division multiplexing (WDM), it's able to have up to eight connections to that site.

In addition to the gigabit link, Penn started its resale service with 100-Mbps, added a second 100Mbps link within nine months, and just recently bumped up the service again to 500Mbps.

Lessons learned. Palladino notes, "We're large and can't afford to be out [of service]. If we were out for two days," he adds, "I would be fired" (and he's not joking). But his group has found the service to be very stable and reliable. Even with all the growth experienced, the level of support hasn't slipped. Penn has now chosen to have only one backup ISP, rather than the two or three it had in the past.

Palladino was also pleasantly surprised to find that the price quoted by Cogent was not a "teaser rate" and has stayed stable, which, together with the reliable service, has led to a long-term partnership that will stay in place through 2009. Dave Schaeffer, Cogent's CEO, observes: "We're an enabler. What organizations do with this bandwidth is only limited by their imaginations." Penn is one of nearly 400 universities and colleges served by Cogent.

Overall, the impressive amount of connectivity purchased by the University of Pennsylvania has permitted the 50,000 users of its network to pursue their studies and research without ever having to "beg" for more bandwidth. **CT**

Wendy Chretien is a senior network systems consultant with Elert & Associates (www.elert.com), independent technology consultants. E&A does not endorse, sell, or resell any products.

An increasing number of schools nationwide are reaping the benefits of video lectures. They help supplement the curriculum, reinforce core concepts, and increase student-teacher contact. However creating video lectures can be a difficult and time-consuming chore because it requires video editing. Visual Communicator offers a different approach that's quickly becoming the new standard. It simplifies the process, enabling the creation of high-quality video lectures in less than an hour. Here's how:

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"Visual Communicator makes it easy to create streaming video content in a typical lecture format."

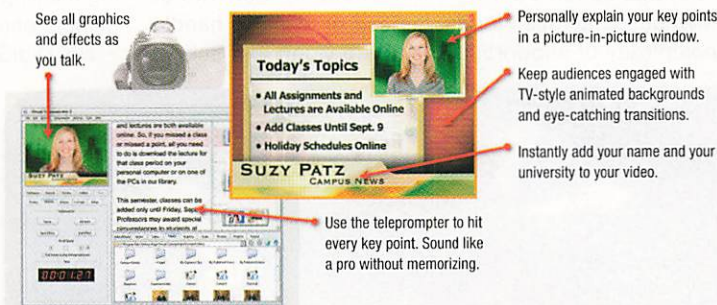
— Professor Steve Linthicum, Sierra College

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Should We Outsource IT?

Smart schools are discovering that by freeing up IT to focus on core competencies, outsourcing may be the great higher ed 'enabler.'

AN INSTITUTION'S CORE COMPETENCIES are what make it unique and desirable—strengths that vary from school to school. Managing IT, however, may not always be one of them. That's why institutions of higher education often look at ways to outsource some of their IT functions to outside experts.

At the **University of Florida**, for example, outsourcing certain IT-related projects has proved to be a smart decision. The university's distance learning program serves up sophisticated video, text, animation, and simulation content via high-speed Internet connections to students at four campuses across Florida. Instead of trying to handle the complexity of supporting streaming video, the school

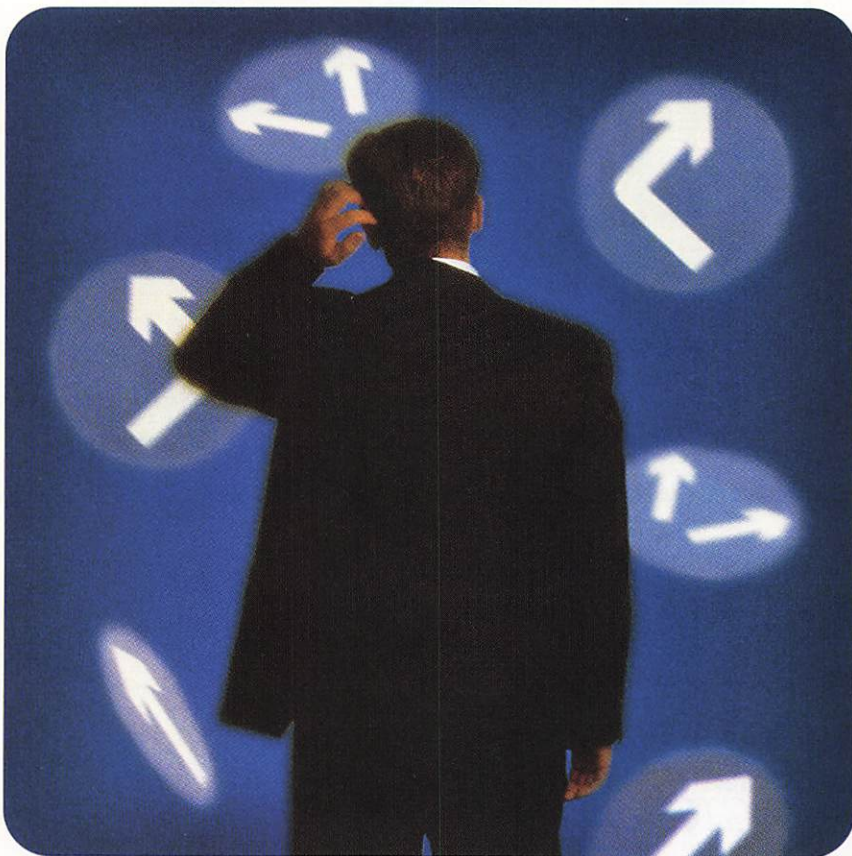
decided four years ago to outsource the project to Nashville-based DigiScript (www.digiscript.com), explains Bill Riffie, associate provost for Distance, Continuing, and Executive Education.

"After we decided what resources we'd need to physically capture, host, and support [the project], we came to the conclusion that we didn't have the infrastructure to provide the reliability we needed," he says. His reasoning is a classic example of what often drives outsourcing in higher ed: "We didn't have people on campus who got up in the morning thinking, 'I need to capture lectures today and that's my number one priority.' They had 50 other things to do instead."

So, DigiScript now supplies all the encoding, equipment, hosting, and support for the distance learning project, and four DigiScript employees work right on campus. Unlike Riffie's staff, those employees *do* spend their days thinking about how best to handle complex streaming media projects. In fact, says Riffie, DigiScript has proved to be an excellent outsourcing partner, and not just vis-à-vis performance (the service vendor has maintained 99 percent uptime over four years, and has captured and served thousands of hours of lectures), but as a partner in helping to improve the process. For example, the university and DigiScript are now working together on a sophisticated keyword search function that can search videos for spoken words. "We believe we're the first in the world to do it," Riffie discloses.

The question is: Without its partnership with DigiScript, would the school be where it is in its distance learning program? "Without them, I'm not sure I would have pursued any of it," Riffie says honestly.

In another example of strengthening a program by outsourcing to experts, Riffie cites the university's non-traditional Doctor of Pharmacy program. "We outsource the marketing of that to a company that has developed a proprietary system that follows our students from initial interest to enrollment." Through that company, they discovered an interesting fact:



25 percent of potential students for the program take up to five years to enroll. Without an outside partner with professional data-tracking and marketing expertise, Riffie says, the school would have abandoned marketing efforts to those students. Instead, they now know to continue pursuing them.

To Outsource or Not to Outsource

Clearly, outsourcing doesn't have to mean working with an overseas help desk vendor; nor does it mean dismissing the IT department. Rather, as the University of Florida examples illustrate, it may mean that when you add a new service or take on a complex project, you'll want to carefully select a partner with expertise that complements your

almost always the impetus behind outsourcing, most experts agree that outsourcing may or may not be less expensive than keeping a function in house. Importantly, outsourcing certain areas frees up staffers to focus on core competencies and their improvement. Tritsch agrees that, indeed, when it comes to outsourcing, there are other things to carefully consider, including control of the project or technology. Furthermore, with IT, Tritsch says, some outsourcing is inevitable. "It's really not a matter of if; it's a matter of how much."

In that case, where should you start? "We'll usually look for where the customer is having the most trouble and is weakest," he says. "That varies from customer to customer." Compass helps schools figure out

“Although cost is frequently the impetus behind outsourcing, most experts agree that outsourcing may or may not be less expensive than keeping a function in house.”

own—especially if the project is outside your staff's knowledge base.

Outsourcing is nothing new to higher education, of course. Areas like facilities management and food services have been outsourced for many years, points out Geoffrey Tritsch, president of Compass Consulting International (www.compassconsulting.com), an independent consulting firm focused on technology in higher education. And as IT has grown as a cost center and focus of interest, outsourcing has "been filtering into technology more and more over the years," he says.

Still, in strategic planning with higher ed clients, Tritsch adds, the questions always come up: "Should we be outsourcing? And if so, how much should we be outsourcing?" Although cost is

what those problem areas are and calculate the dollars it would take to outsource a specific function.

Tritsch, who has been an independent consultant to higher education for more than 25 years, says he's watched the outsourcing pendulum swing in and out of favor several times over the years. Right now, "I would say we're probably pretty far to the outsourcing side, and it's starting to swing back," he says. But many factors—including national and worldwide economic climate changes—can affect the pendulum as well. For a useful Q&A white paper about outsourcing in higher education, go to compassconsulting.com/articles/outsource.html. **CT**

Linda Briggs is a freelance writer based in San Diego, CA.

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Developing a Strategic Support Plan

There are many arguments for campuswide help desk consolidation; herewith, a few of the best.

A CALL FOR SUPPORT comes into a university IT group, and is reported to three or more different operating units of the department. All three units assign the case to one of their staff members, who each takes a different approach to analyzing the problem. Some, perhaps all, of the assigned staffers conclude that the issue really isn't in their area of responsibility, and close their files. All assume that someone else will take care of the problem and inform the user as to problem resolution status.

Or...Perhaps the case is reported directly to two or three different resources, all of whom devote some time and energy to resolving the problem. When each reports back to the caller, they then discover that another group has already handled the matter.

Or...A very senior IT staff member is pulled away to respond to a reported issue, and finds herself running around the campus to get the basic information required to define the problem. In the meantime, the progress of a vital implementation project is threatened by the loss of her time.

Or...A local "guru" decides to "help" a colleague install an application or make changes to an environment. In the process, oops! The system stops working. Additional guru help is invoked, along with assistance from one or more campus help desks, each attempting various fixes. Unfortunately, no guru or help desk resource is aware of the "contributions" the others have made.

Sound familiar? It should. These and other unpleasant scenarios are often discussed (and have been for years) whenever IT support people get together. What's a harried IT Support executive to do? Let's examine how one school addressed the underlying issues.

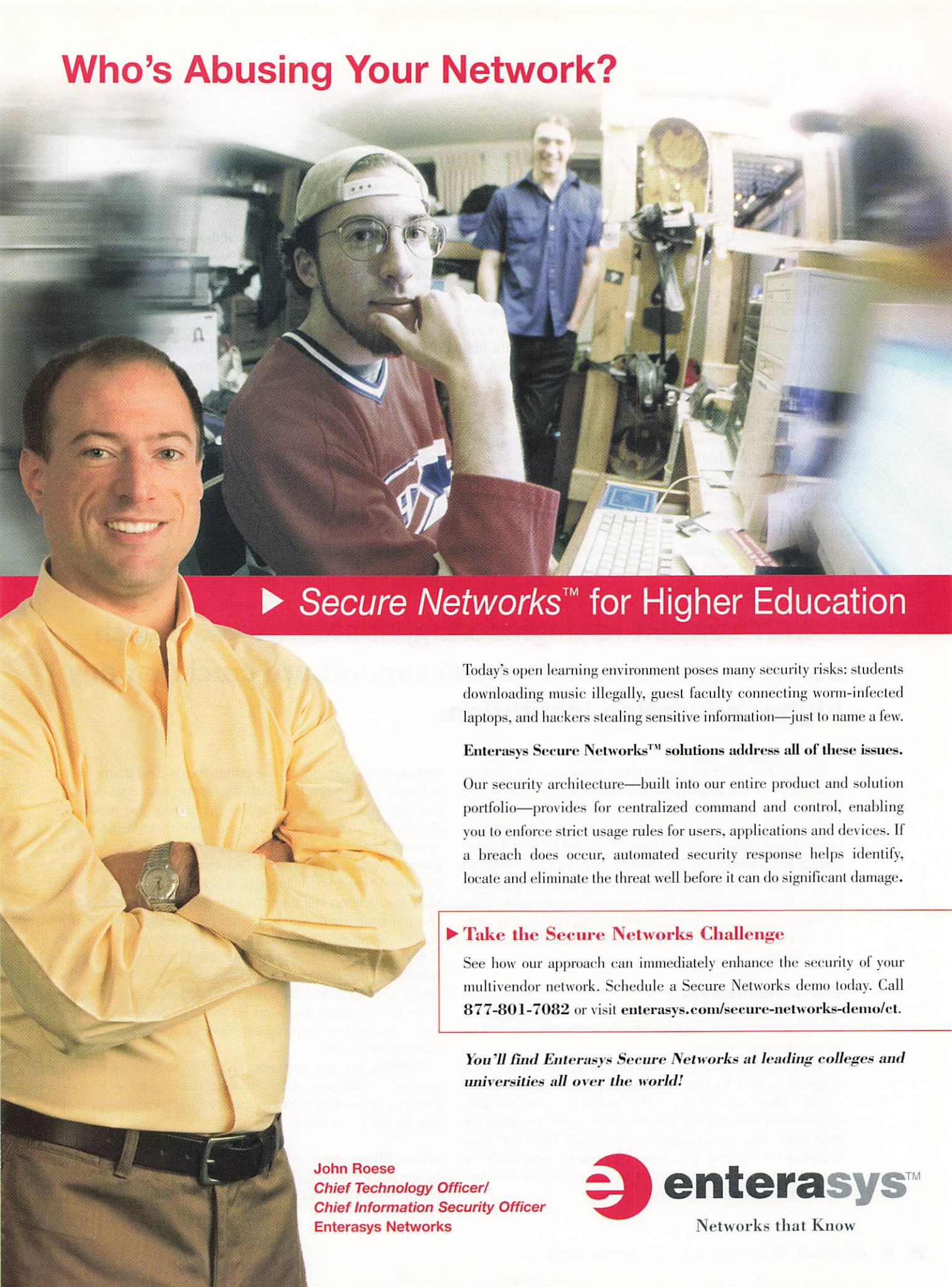
Evaluate and Change

King's College (PA) is a small, Roman Catholic institution in Wilkes-Barre, with a student body of 2,200 full- and part-time students. Not long ago, the college's CIO, Paul Moran, put together a project team to evaluate the role and process of the IT help desk. The assignment: to come up with a proposal for dealing with a range of perceived strategic and tactical issues.

The team met weekly to talk about scope, technology, hours of operation, staffing, definition of what services could be offered, quality levels, and process. Recognizing that all technology carries a



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support burden, the team worked to balance the need for support against the pool of available resources. The final report and proposal was submitted six months later, and was accepted.

The key strategic points covered by the report included the establishment of a single, campuswide point of contact for all support, and implementing a robust tracking system to both manage all cases and capture the vital data that would enable management of the department, staffing levels and skill sets, and overall quality.

Single Point of Contact

Early on, the team saw that all of the various existing support channels needed to be consolidated into a single point of contact for students, faculty, and administration. The recommendation was that all incoming requests would be entered into a case-tracking system, to which the entire organization would have access. A tiered organizational structure was designed, and escalation policies and procedures were drafted as part of the team's report.

Staffing

The team's report defined the number of professional staff members that would be needed, and summarized their duties and the new workflow. The restructuring of the organization showed Moran that other changes would be required as well.

"Hiring has changed," he says. "We look first for team-player mentality now. The team is everything. The 'lone techie,' no matter how smart, will simply not work in this scheme." The CIO even admits that a few of his staffers have left because they knew they wouldn't fit into the new scheme, but he notes philosophically that "you can't change what people are. You have to accept what talents they have and don't have, and create an environment that allows them to perform."

Universal Principles

The re-engineering of King's College's IT support benefited from some significant advantages that should be recognized: First, King's College is a small institution, making the

“ In IT support re-engineering, strategic details such as presidential and financial support are crucial at any higher education institution. ”

Clearly, the need to consolidate resources for greater efficiency is a key strategic issue that other schools ought to seriously consider. Most universities typically have several separate help desks of varying sizes that have grown up over time, due to the vagaries of budgeting and departmental empire-building. Yet, Moran and his group realized that a single consolidated help desk would not only be able to give far better support than three or four separate units scattered about in different departments across the campus, but consolidation of the groups would result in lower costs overall.

Capturing the Data

By recording all pertinent details of all cases, the new incident tracking system enables Moran and his team to make some informed choices.

"One change was the purchase and installation of a software system to enable users to reset their own passwords," Moran comments. "The justification for the purchase came from the fact that the most common call to the help desk was for forgotten passwords." The team now analyzes the number and types of calls to determine the timetable for moving resources from support to development and innovation.

endeavor more straightforward than it would no doubt be in a larger institution. Second, the effort had presidential backing—no minor detail in the success of any initiative. Finally, the budget was made available to implement the recommendations, in terms of purchasing technology to enable the changes to work. But strategic details such as presidential and financial support are no less crucial at any higher education institution, and the specific points of the recommendation of Moran's team are equally valid for any school. Consolidation of disparate help desk units into a single cohesive unit, if properly thought through and executed, can result in newfound efficiency. What's more, the ability to analyze the data from all support requests campuswide will allow the IT group to make better decisions about technology purchases, training, and allocation of support resources.

Perhaps the key question you now should be asking yourself is: Can you get presidential backing for an IT support re-engineering effort at your school? We'll save that one for another column. **CT**

Mikael Blaisdell is principal of Mikael Blaisdell & Associates (www.mblaisdell.com), an IT support consultancy serving higher education and corporations worldwide.

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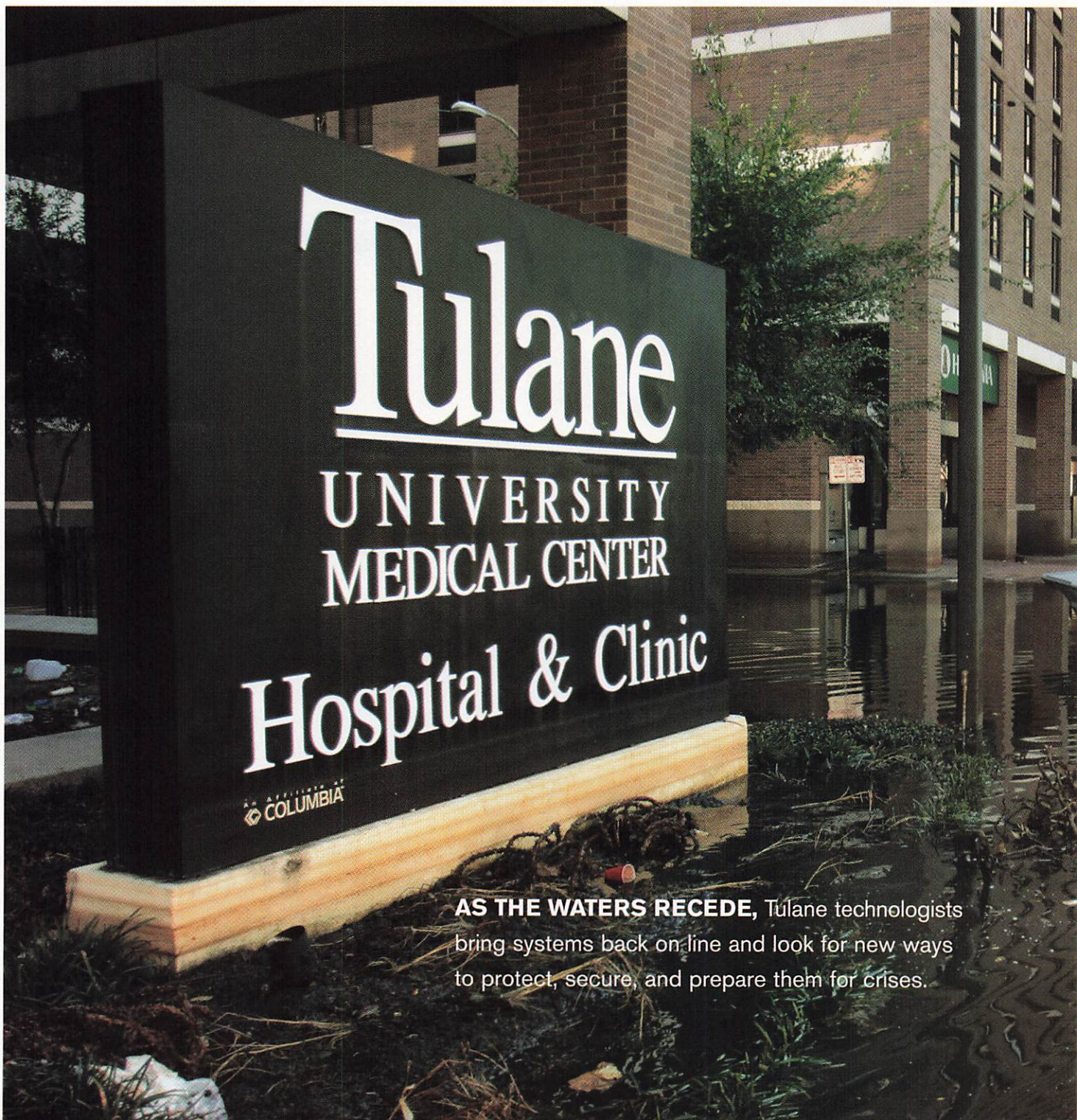
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recovery plan into place. **Here's how to catch up.**



Within 48 hours of Hurricane Katrina battering the Southeast, only two of the many four-year universities in New Orleans had Web sites up. The others showed “failure to connect” messages to students, parents, family members, friends, faculty, staff, or others trying to learn about the state of the schools in which they had a vested interest.

Two weeks later, the silent schools showed signs of life online, albeit with rough edges: links that went nowhere and highly visible content that was dated. On its home page, one Catholic university mourned the passing of the Pope and shared the schedule for April 2005 memorial masses. Another university, whose buildings sustained flood damage up to the second floor, advertised on its home page for data-entry operators to aid in hurricane recovery efforts from its temporary headquarters in Baton Rouge.

And what of the two schools that remained viable in some form almost throughout the duration of the storm? One, **Tulane University** (LA), ran a blog updated daily by President Scott Cowen, keeping visitors abreast of the safety of faculty, staff, and students and of conditions at its campuses. It was hosted on an emergency Web site, which the university’s normal URL redirected site visitors to. After the disaster, Tulane moved temporary operations to Houston and held online chats with Cowen so that he could respond to fears and questions from the public (no, emergency power hasn’t been maintained at the medical school, which means research *has* been disrupted; and, yes, formal rush for sororities *will* take place—in the springtime). The university has

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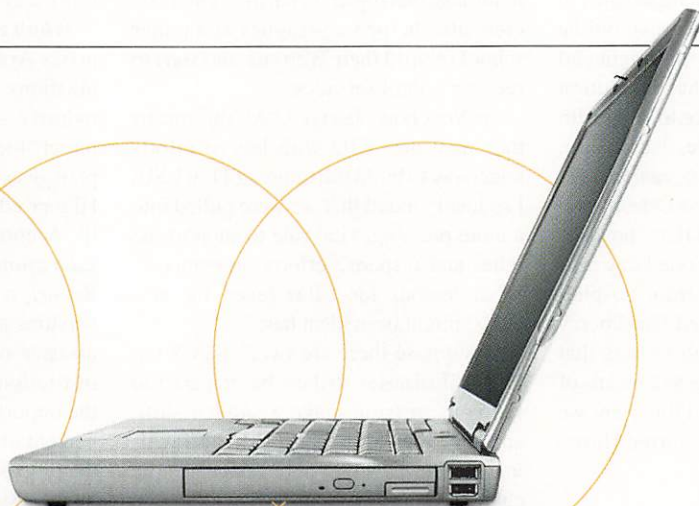


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also provided a continuous and unbroken chain of updates via its Web site.

The New Orleans campus of Louisiana State University (with its main campus in Baton Rouge) also remained live online through most of the storm onslaught and disastrous aftermath. The institution posted an emergency notice to its Health Sciences Center Web site, lsuhsc.edu, stating that the academic campus for LSUHSC in downtown New Orleans had suspended operations and that "hospital personnel should follow Code Gray procedures and instructions from hospital leadership." It also advised Blackberry (www.blackberry.com) subscribers that they could use their devices as a means of e-mail communication, "in the event we lose our Exchange servers during Hurricane Katrina."

When Is a Disaster Too Catastrophic?

Although many have argued that the proportions of the Katrina disaster (a Category 4/5 hurricane accompanied by no end of additional and devastating complications) went far beyond a scale that can be planned for, others insist that the tools of disaster recovery planning (DRP) aren't necessarily prohibitive in terms of dollar or time investment, nor do they need to be highly complex. Keeping up a blog on an emergency Web site doesn't require complicated technology, for instance. And while populating a blog is a far cry from rebuilding research data that has been destroyed, on the heels of any disaster communication becomes vital: It is the link that holds survivors and supporters together while they take emotional and physical stock. In such times, reliable information becomes gold.

Days after Katrina's passing, new LSU CIO Brian Voss wrote to *Campus Technology*, "Yesterday, I 'suspended' normal IT support activities (with the exception of our administrative systems and computing functions, which 'run' the university)." An absence of "normal users" on campus allowed him to redeploy his staff to help state and federal recovery agencies set up temporary

phone and network operations on campus, and helped his staff to create "quick and dirty" applications to aid in information gathering and sharing. The LSU crew also helped colleagues at another school rebuild their Web site and start to recover e-mail services.

As Voss now observes, "All this means that, as a new CIO with lots of efforts underway to build the future of IT at LSU, I suddenly found that we were pulled into a more pressing, vital role to support the relief and response efforts on campus." What lessons for CIOs (even for new CIOs) might be evident here?

"I suppose there are two," says Voss. "First, if disaster strikes, be prepared to see your mission make a sudden shift, and hope that you've a capable staff willing to be flexible and adapt to the change—I am fortunate to have such a staff." (CIOs might also *hire* with an eye to such flexibility.) "Second," adds Voss, "disaster-recovery planning efforts in higher ed IT shops need to take on greater urgency in terms of resources devoted to their planning and preparation. The aftermath of a crisis is no time to try to recover ad hoc, especially when one considers that ramifications of a disaster can be far broader than the traditional 'data center hit by a tornado.'"

In fact, besides hurricanes, in the last 20 years universities and colleges have faced deadly ice storms, earthquakes that leveled whole campus buildings, terrorist attacks, train derailments that required campus evacuation, animal activists taking over a research building, the potential presence of anthrax and SARS, and even the more seemingly mundane computer worms and viruses that haunt any network.

The fact of the matter is: Disasters encompass people and services. According to Ross Armstrong, senior research analyst for the Info-Tech Research Group (www.infotech.com), in the face of disaster, the role of those in charge of IT is to figure out how to get regular users—including the IT department itself—back up and running again. That challenge becomes an exercise in risk analysis, he points out, and the first question a CIO

should ask himself is: What are the potential hazards we face? The second question is: What is to be brought up first, second, third, and so forth, and in what order?

Who's ready, who's not. Yet what surprises Armstrong is the number of organizations in general—regardless of industry—with either no plan in place, or merely the intention to implement such a plan over the next two to three years. Higher education is not immune to this ill: According to Info-Tech's *DRP in the Education Sector 2005 Benchmarking Report*, a surprising 47 percent of universities and colleges currently have no disaster recovery plan in place. These institutions, do, however, acknowledge the importance of having such a plan: 68 percent of them say they are currently in the process of planning. Unfortunately, it may be some time before many college and university DRPs see implementation: 32 percent of schools with no current plan concede it may be up to three years before they have one in place, according to the report, and that may be because security and end user support are higher IT priorities than disaster recovery—just a notch above the categories of network/LAN/WAN, Web site and IT governance. But the good news is that, according to Info-Tech, among the 53 percent of schools currently with a plan in force, a whopping 86 percent are improving that plan. (For more DRP data, see "Lessons in Disaster," page 14.)

The money factor. Another challenge unique to the university setting is the fact that faculties and departments receive different levels of funding, says Info-Tech senior research analyst Curtis Gittens, adding that this makes a comprehensive campuswide disaster recovery plan "difficult to implement."

"Whereas large corporations can focus their resources on implementing a comprehensive and cohesive strategy," he says, "universities just don't have that luxury. This means that to create an effective disaster recovery planning strategy, universities should implement a flexible, heterogeneous [plan] that matches the resources available to the individual units. Well-funded faculties should

implement the complete [plan]; less well-funded faculties should implement the lower-cost version."

Hard Choices

Ben Whorton is a network administrator at **Birmingham-Southern College** in Alabama. He and a cohort staff comprise the Network Services Group, which is in charge of e-mail and server administration, and network security for the school. (Another IT team handles administrative computing; a third team takes care of client services.)

While the school as a whole has a disaster plan for the physical campus, and administrative computing has a disaster recovery plan in place for its pieces of IT, until recently, the network services group didn't have its own plan—that is, aside from a disk backup spanning a couple of weeks—and that backup resided on a single server. "If something were to happen to that box, then we had no backup," says Whorton.

Bad, worse, worst. When he was appointed, he relates, an early goal was to put a plan in place that included redundant backups: to replace all single-drive servers with redundant servers equipped with RAID controllers. Still, by 2004 when Hurricane Ivan was rolling in, the plan hadn't yet been implemented. At that time, knowing the storm would soon hit, Whorton saw only three options. Best case, he remembers, "was leaving our systems up in the hope that we didn't lose power." The next was to "leave our systems on and if power went out, pray that there was no dirty power that could fry our systems." Neither approach was palatable to him. "We stood to lose a half-million dollars' worth of equipment—plus all the data, which you can't really put a price on."

A third option—the worst-case scenario—was to go into the server rooms and proactively power-down all systems. Then, once power was restored, the IT people would bring them back online. Yet, administrators didn't want to shut down systems, since that was how they expected to be able to contact parents and let them know what was

6 steps to Develop Your Disaster Recovery Plan

SO YOU'RE ONE OF THE LAGGARD SCHOOLS.

How do you build your disaster recovery plan *pronto*? What should it include? According to Ross Armstrong, senior research analyst for Info-Tech Research Group

(www.infotech.com), there are some basic steps you need to take:

1. Build your team. Who should it include?

- ▶ The CIO, IT director, or IT manager; whoever is in charge of IT operations.
- ▶ The facilities manager or office manager—whoever is most conversant with how the facility is physically laid out.
- ▶ A network administrator or database administrator—whoever has his or her finger on the pulse of critical data.
- ▶ One administrative and one technical representative from each distinct unit—for example, the dean of the faculty or department chair, plus a senior IT manager from that group.

Info-Tech advises its higher education clients to put a high-level IT administrator in charge of the disaster recovery plan, because, according to Info-Tech Senior Research Analyst Curtis Gittens, that individual "will be able to effectively implement the technology to support business continuity in the event of a disaster."

2. Conduct an operational analysis. Analyze inventory, physical security, data access, and all other critical services. Review the currency of passwords for user accounts, how complete data storage is, and what the status of backup procedures is.

3. Perform risk and business-impact analysis. Here's where you look at critical IT assets, and for each one "determine how long it can go down without the impact being felt by the organization; its bottom line suffering because of that loss," explains Armstrong. "Whichever of those timeframes is the shortest, that creates your prioritized list."

4. Document all systems and applications. This entails pulling up your network topology, figuring out IP and MAC addresses, taking inventory of all printers and fax machines, creating a vendor contact list, making note of all phone lines, and so on. This stage, says Armstrong, is where most organizations really "start to falter, because this work is time-consuming." It's also critical that IT managers get senior administrators to buy into this phase of their work. If the campus is geographically dispersed, investment in an automated inventory tool might be worthwhile to search the network for nodes in hidden corners.

5. Create an emergency contact list and distribute it in digital and physical form to administrators, department heads and, of course, every member of the disaster recovery planning team. It shouldn't be publicly available, but it should be updated regularly. Participants should have access to a copy at home and in the office.

6. Hold an annual dress rehearsal for key parts of the plan—everything from pulling the plug on a server (after its data has been replicated elsewhere) to designating a key building "destroyed," and then working through the steps of recovery.

"Unless something's likely to happen, senior management is not always willing to invest money in the things that don't bring that immediate return on investment," explains Armstrong. "It's going to be up to the IT professionals to ensure that senior management is routinely aware of what can happen if a disaster recovery plan is not in place and a disaster does in fact occur."

happening in Birmingham with the students. "We had a quandary," Whorton admits. In the end, the group shut down operations for about 12 hours, until the worst of the storm had passed. Ironically, the college ended up losing power for

only about 30 minutes.

Clarifying priorities; weighing resources. That experience led the team to come up with its disaster scenario. "Since the college lost power for only a short amount of time, we realized we

needed a backup solution to keep our systems up so parents could visit our Web site to find out what the college was doing to protect their students, provide a means to communicate with their students here at college via e-mail, and keep our phone systems up and running," says Whorton. "We wanted to make sure there were as many opportunities as possible for parents and students to communicate."

As a result, the team has made two primary changes: First, it has decentralized many of the servers so that, for example, if one building suffers water damage and floods a computer room, most of that data will be replicated elsewhere on campus. Whorton admits that even that plan is not failsafe. "If we have the unfortunate luck of having two buildings that house the equipment suffer the same flood damage, we're in trouble. But that's the chance we take, given our limited resources."

Second, the team researched and proposed three backup power solutions. The least expensive (about \$12,000) required purchasing 26 uninterruptible power supplies (UPSs) for key servers; this solution would buy 30 minutes of uptime in a power outage, and would last two to three years. The second solution, (around \$25,000) was a rack-mounted UPS. A third solution (most expensive, at about \$35,000) involved a gas-powered generator plus UPSs. Challenges included the need for the space to add a concrete pad to mount the external generator, and in the long-term, increased maintenance capability. As it turned out, the administration went for the mid-priced solution, and Whorton's group purchased APC equipment that would keep operations running in their current state for five to six hours.

Reality test. As it happened, the school had a chance to try out the new solution

when Hurricane Dennis swept through in July 2005. Recalls Whorton, "The storm was supposed to hit on a Sunday and we started preparations on that Thursday. By end of day Friday, we were ready to go. By Saturday morning, Dennis was hitting the coast, and I said, 'OK, here's our plan: Everyone has contact numbers. Let's just stay in contact.' If we needed to make an adjustment, our security team on campus volunteered to pick us up and take us to different buildings." In the end, Whorton says, "We didn't have to. I stayed up until midnight on Sunday, and once the eye [of the hurricane] passed, I knew the worst was over. We had suffered no damage or outages."

Rather than trying to keep *everything* up, Whorton's group focused on keeping communication links up: the phone, Web, and e-mail. Since no one on campus was working through the storm, the school simply shut down its ERP system and storage facilities.

6 Your Disaster Recovery Plan Should Include elements

A QUICK GOOGLE SEARCH WILL REVEAL publicly available plans for various universities, but Info-Tech recommends these sections:

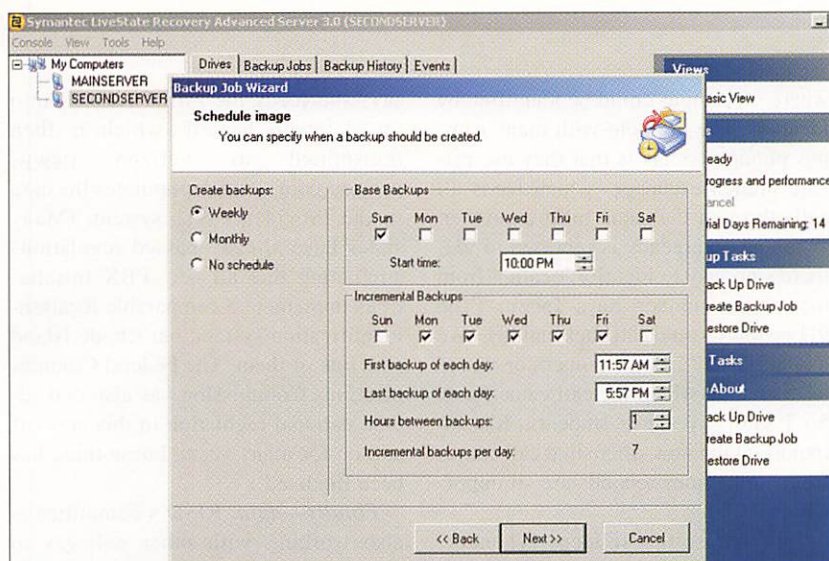
- 1. Plan for regular backup.** Although tape is the typical backup method, some schools have begun using disk-to-disk backup for time-critical data.
- 2. Plan for archiving.** This involves creating a system for making copies of your current data, and storing those copies elsewhere. Since disasters frequently have a geographic aspect to them, archiving may be your best chance of recovery from a disaster if the on-site copy isn't available.
- 3. Thorough risk analysis.** This encompasses prioritizing business needs and figuring out what the major risks are for your school. A university with on-campus dorms away from the coast but next to a major airport will derive a different set of disaster scenarios than those of a commuter college that resides on or near an earthquake fault line. Current Info-Tech information also recommends that you examine common points between your primary site and the archiving or recovery site: "You must make sure that the two sites are geographically dispersed so they won't be prone to the same risk of natural calamities, utility infrastructure mishap, or civil unrest."
- 4. Business impact analysis.** Here's where you explicitly determine the bottom-line impact of functions and services, to prioritize the order in which they must be brought back up after an outage.
- 5. Crisis management.** This brings in outside agencies—police, fire, and emergency—to help establish safety procedures.
- 6. Recovery planning.** When a disaster strikes, this lays out what role individuals play, how the plan should roll out, and what technologies and services should be called on in service of the plan.

Looking at Unique Concerns

Lori Franz, a management professor in the College of Business at the **University of Missouri-Columbia**, has explored the topic of disaster recovery planning for a presentation she delivered at Educause2003 (www.educause.edu). According to Franz, one of the DRP challenges unique to a university setting is the fact that "everyone likes to have control over his or her environment."

Centralize, centralize. At MU-Columbia, she says, "We've done a lot of work to try to get all of our decentralized file servers into the facility where there is backup. We try to get everyone to realize that it isn't safe just to have these departmentally-owned file servers where everything is contained in a single place, and they're not taking care to back up, and tapes aren't being stored in a different location." Changing such a mindset, however, means making participants aware of the *value* of a centralized computer effort—and "creating trust in the computing organization."

Public or private? Importantly, her school's disaster recovery plan must take



AT SYRACUSE UNIVERSITY, Symantec's LiveState Recovery maintained real-time backups.

into account a unique situation, says Franz: "We have the largest university-run nuclear reactor in the country on this campus. When we're thinking about things, we think very broadly about what could happen." And, understandably, the institution has struggled with how *public* its disaster recovery plans—or any related campus details—should be. Franz recounts how at one time, the university had placed online maps of every building on campus, complete with drill-down layers. "You could see the plans and schematics for every building. You could access them. Now, we don't have that," she says.

Yet, a key element of the plan that has been made public is the existence of an emergency Web site. "We're sitting here with 24,000 students," she says. "How do you communicate to the outside if something happens on campus? The Web site is available to everyone—it's where people will go for the news if something happens."

More Mundane Concerns

At the other end of the spectrum, opposite problems of biblical proportion, are the daily worries of finding the time to keep servers running optimally and clean of potentially devastating viruses and worms. Michael Kearns, systems administrator at Syracuse University (NY), knew a better plan for disaster recovery was necessary after the campus was hit

by the MyDoom virus in 2003, sending IT personnel scurrying to patch and rebuild systems. Although, fortunately, vital data wasn't lost, Kearns worried about damage to the functions performed by the school's energy servers which automate climate control and electrical operations campuswide: He knew that if the wrong energy server had gone down during a winter blast, vital research work could have been lost due to extreme temperature changes.

Real-time recovery. The solution he and his team settled on focused on maintaining real-time, disk-based backups using Symantec LiveState Recovery software (www.symantec.com). The advantage of going to disk is that recovery can be quick. Kearns says this has made the IT team more willing to apply security patches; the solution allows a "snapshot image" of the server to be recalled if a patch job doesn't go as planned. (Tape is used for archival purposes.) He reports that the school had the chance to test out the system in real time when a domain controller upgrade went awry and the server became inoperable. A quick recovery through LiveState had the system back up and running in less than 30 minutes.

Mining a Pan-Departmental Team

Of course, disaster recovery goes beyond protecting data on servers. At the Rhode

Island School of Design, Judy Tanzi, one of the school's two telecommunications experts, participates in her university's DRP committee which was formed two years ago (in the wake of 9/11), and also includes representatives from Facilities Management, Housing, Health Services, Residential Life, Environmental Health and Safety, and Fire and Public Safety. All 12 members of the group have gone through Community Emergency Response Team (CERT) training, which educates individuals about disaster preparedness for hazards, and teaches basic disaster response skills such as fire safety, light search and rescue, team organization, and disaster medical operations.

Drilling down to essentials. As the committee members developed more of a "world view" about disaster preparedness and recovery, they had to sort through what RISD's plan should encompass.

"That was very difficult," Tanzi recalls, "because there were so many thoughts that each individual had from his or her side of the house. So, we just put all ideas out there, and kept breaking down the list as to what were the 10 most important things we needed to do."

Student safety came first; there was no dispute about it. "We started from that point," Tanzi says, pointing to the questions the committee members faced. "What happens in a disaster? How do we get to the students? What do we do?" After many meetings, she says, a Top 10 list was formed. Then the group had to consider what types of disasters were *likely* to happen. One challenge for the school is that the campus is spread throughout the city of Providence, which meant that committee members also had to come to agreement on where the main point of contact would be, in the event of a disaster. Tanzi reports that the committee has met monthly and often includes outside representatives (such as those from the police and fire departments), in order to sort through what role the school would play in disaster scenarios.

Informing parents. After student safety, says Tanzi, RISD's next step is to put together a plan that can be distributed to parents, so they will know what steps

would take place if an emergency were to occur on campus, as well as which means to use in order to communicate with the school. From there, the committee will start pulling in other campus participants to act as emergency leaders.

Re-examining telecom opportunities. The RISD taskforce has also recognized that IT and telecom could work together in multiple ways. Now, to enable non-obstructed communications, says Tanzi, 10 campus employees have cell phones with priority status. That means that in a disaster, when everybody hits their cell phones, the calls made by those 10 participants will go out on the same frequency as police and fire calls. Tanzi has also set up certain phones on campus (running "plain old" copper wire) so that in the event of an emergency that disrupts regular phone service, the phones can host the redirected 800 number phone service given out to parents in the school's disaster plan.

Tanzi isn't new to considering the vagaries of disasters. In 2000, she pushed her school to implement a 911 system that would ensure that calls made any-

where on campus could be identified by location. The problem with many campus phone systems is that they use private branch exchange, which feeds all calls through the same billing number. When an emergency is reported to 911, there's no way to identify location from that phone number. Says Tanzi: "[The 911 people] would call back and say, 'We had a 911 call.' But the operator would have no clue where the call came from. So I said, 'We have students. It's too important to know where that call comes from; sometimes seconds are so important in a life.'"

Tanzi chose the Telident 911 enterprise solution from Teltronics (www.teltronics.com), a turnkey solution that places a PC in the school's switch room, running a database application that identifies a specific phone with its location. When a 911 call occurs on the PBX, the database feeds location information to the emergency dispatch centers of local police and fire departments, as well as to emergency personnel on campus. The system can also perform e-mail notification, and send text to cell phones. Tanzi

says she feeds the initial records into the database herself, which is then transmitted to Verizon (www.verizon.com), which populates the data in the Providence 911 system. (Many states have already passed regulations stipulating that all new PBX installations implement a comparable location-identification system, but Rhode Island isn't one of them. The Federal Communications Commission has also considered national regulation in this area off and on for many years, but nothing has been finalized.)

Finally—data. RISD's committee is also working with other colleges to locate their data off-site. It would be an informal arrangement, says Tanzi, and the plan is only in the "talking stages" at this point. "We're on one side of the state, and we would probably work with a college on the other side of the river," she explains. "If the city experienced a disaster, but the other side of the state was still up and running, we'd be able to work from that facility."

Data Decisions

For some, data is concern number one in any DRP. Keenan Baker, a storage specialist with technology products and services provider CDW-G (www.cdwg.com), considers the focus on data protection the *starting* point of any disaster recovery plan. At the most basic level, he says, clients decide to look for a good backup scheme (typically, tape) where they can easily back up data on a daily basis. More sophisticated planning calls for failover operations, where an institution can "flip" or "switch over" operations from one campus to another, in the event that the systems in the first one are hindered.

Recovery time/recovery point. Developing a plan at an institution of higher education requires mapping out two objectives, he says: recovery time (RTO) and recovery point (RPO). "The recovery time objective is the time needed to recover from a disaster: how long you can afford to be without your systems," says Baker. The recovery point objective "describes the age of the data you want

The Latest in Backup

KEENAN BAKER at CDW-G (www.cdwg.com) says that when it comes to backing up vital data, a couple of trends in backup technologies can help schools keep costs down and performance up.

Tape has come a long way since the days when it could hold only between 20 and 40GB of data. *Linear Tape-Open* (LTO) is a computer-storage magnetic-tape format first introduced in 1999 by companies such as HP (www.hp.com) and IBM (www.ibm.com). LTO3, which came out in 2004, can hold 800GB of compressed data and transfer it at up to 160 Mbps. The tapes cost about \$120 each, which makes this mode one of the most affordable means to retain data. One aspect of tape backup hasn't changed, however: The predicted archival life is still 30 years. A tape drive to accommodate LTO-3 tapes starts at about \$5,000.

Replication. Some schools have moved to a replication model of backup. Replication itself has been around for a number of years; but technology improvements have taken place in the last three to five years, says Baker, making replication now a more practical addition to backup operations. If bandwidth is readily available between campuses, replication allows changes to data happening at one site to be copied to disks at another site either synchronously or asynchronously. In the former scenario, the copying of data takes place instantly at the remote site; in the latter, the system waits for an opening in bandwidth usage. If the "pipe" is being flooded, the replication waits—typically a few seconds—until traffic has subsided. Data of a certain age can then be shuttled to tape and stored off-site for access in the event of an emergency.

the ability to restore, in the event of a disaster. For example, if your RPO is six hours, you want to be able to restore systems back to the state they were in as of no longer than six hours ago. To achieve this, you need to be making backups or other data copies at least every six hours. Any data created or modified inside your recovery point objective will be either lost or must be recreated during a recovery. If your RPO is that *no* data is lost, synchronous remote copy solutions are your only choice." If a school, for example, is backing up only to tape, he says, administrators might expect to have their data up and running within a day. If the facility is running replication, however, recovery can happen in minutes.

Plans for the 'plans'—and practice. Still, never underestimate the ability of a disaster to thwart the best-laid DRP plans. Baker recounts that following a talk he gave at a conference, one audience member confided that his school's disaster recovery plan was kept online. When disaster struck, wiping out all power sources, nobody could gain access to the plan. Now, *physical* plans are kept in the homes of all vital personnel.

Another mistake common among higher ed institutions: not rehearsing sufficiently. The plan has to be second nature for the participants, says Baker. In addition, run-throughs and simulations give the IT people a chance to check out how well recovery will work. If the tape media has flaws, for instance, they learn that up front—instead of when it's too late.

There Are Backups, and There Are Backups

Ellen Rome, a VP for universal hardware solutions provider STORServer (www.storserver.com), says that when the disaster recovery doesn't work (preferably during those practice runs) it's always nice to have "one throat to choke."

The device her company sells is an integrated solution incorporating server, disks, tape, and software (along with integration services). It's typically rack-mounted, though the company can ship the goods as a single appliance, too.

Installation takes two to three days. Once it's up and running, says Rome, the appliance backs up everything on the network. From there, it performs incremental backups. Sound like your own standard operating routine?

Put the plan on the tape. What stands out is the software. It creates, says Rome, a "daily disaster recovery plan." The operator can include notes regarding availability of individuals and the shifting order of priority in bringing downed servers back into operation. (That prioritization, she pointed out, requires meetings between the IT people and the decision-makers.) This information gets written to the tape. Should a disaster occur, the off-site tapes supply vital responder instructions: who should do what, in what order, and where specific pieces of equipment are located (in order to gain access to them). That same documentation can also be delivered daily from the system, in other forms such as e-mail going out to all participants and their various e-mail addresses.

STORServer founder Bill Smoldt likes to proclaim, "What I sell is boring restores. Usually a restore is exciting, and that's not good. A restore *should* be boring."

Where's the tape? The question he frequently faces in helping clients set up their backup operations is what to do with the backup tapes themselves—and how to retrieve them in the event of an outage. He says sometimes the solutions get creative. One client (not in education) ships them a couple of states away. Should the tapes be needed, a plane will be sent to retrieve them. Another client, with a number of remote offices sans broadband access, has chosen a plan in which servers will be rebuilt and delivered by car to the remote sites. In most cases, he says, organizations choose the "disaster recovery zone" that's appropriate to the types of disasters they expect to experience. That may mean the backup goes a building away, across town, or across the state.

Have a Plan and Work It

LSU's Voss points out that many regions face situations far more dire

than the loss of a single data center. "In Louisiana, we've lost a major US city. While that doesn't diminish the impact of the crisis on a given university, it does mean it's competing for resources with a much broader range of needs. We all need to think through this more carefully. I, for one, am going to move smartly, making disaster recovery a key component of my new organizational structure and mission. Because next time, it could be LSU." **CT**

Dian Schaffhauser is a freelance writer specializing in technology coverage. She is editorial director of Sourcingmag.com.

>> Useful Links

RESOURCES:

Federal Emergency Management Agency
"Building a Disaster-Resistant University"
www.fema.gov/pdf/fima/dru_report.pdf

Community Emergency Response Teams
www.training.fema.gov/emiweb/CERT/index.asp

DisasterHelp, Federal Web site
<https://disasterhelp.gov/portal/jhtml/index.jhtml>

Disaster Recovery Journal
Business Continuity Services Directory
www.drj.com/vendor/drj5a.html

Disaster Recovery Planning
www.educause.edu/ir/library/pdf/DEC0301.pdf

Disaster Recovery Planning Checklist from the University of Wisconsin
www.doit.wisc.edu/security/docs/drpcchecklist.pdf

National Clearinghouse for Educational Facilities, "Disaster Preparedness and Response for Schools"
www.edfacilities.org/rl/disaster.cfm

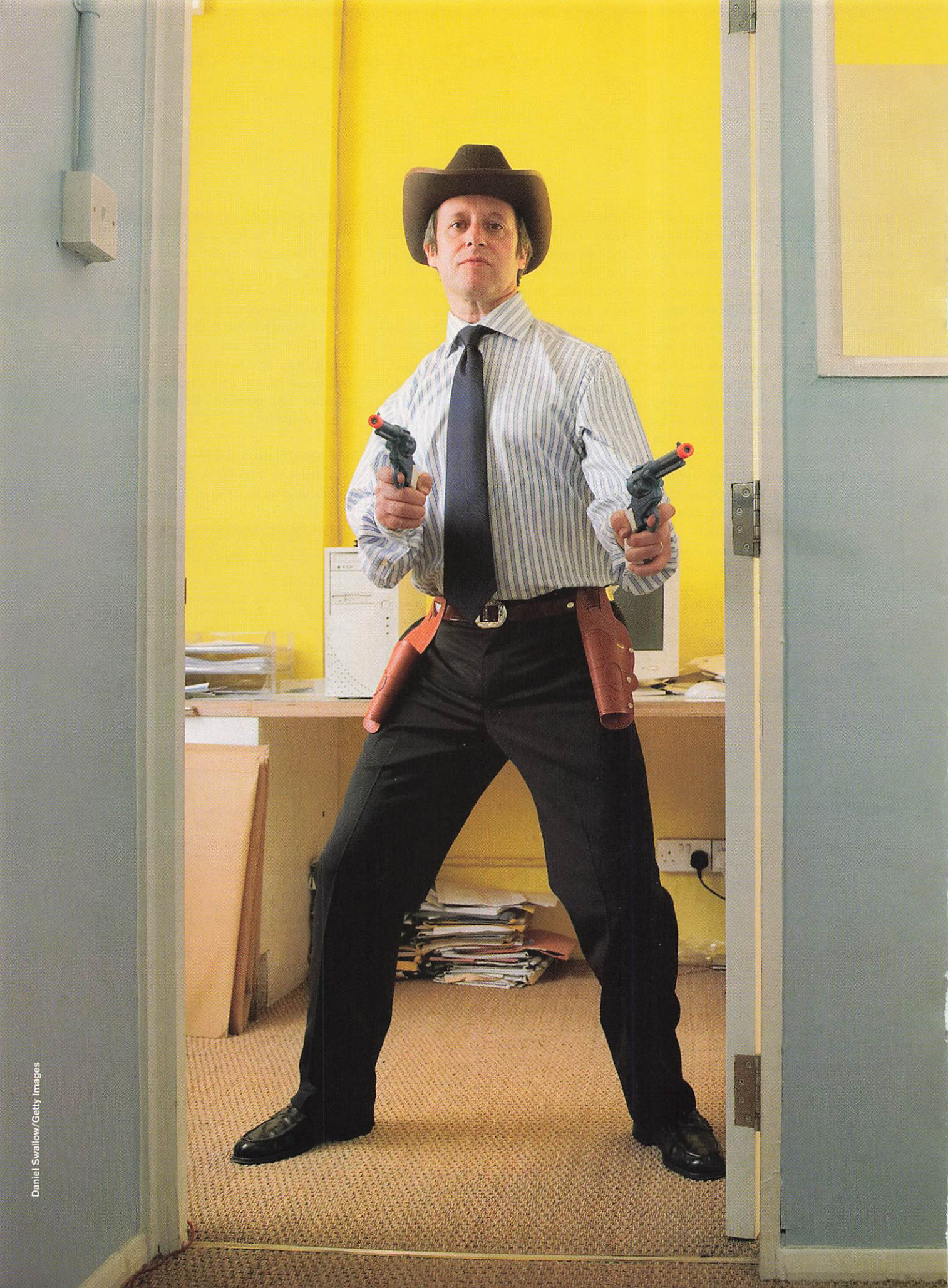
Natural Hazards Center
"Disaster Research" Newsletter
www.colorado.edu/hazards/dr

PRODUCTS:

Teltronics Telident
www.teltronics.com/products_services/ers/tes.asp

STORServer
www.STORServer.com

Symantec LiveState Recovery Advance Server 6.0
sea.symantec.com/content/product.cfm?productid=23



MARKETING mavericks

Whether it's to dramatically improve enrollment numbers and quality levels, or boost advancement dollars, the latest analytic theories and database marketing strategies are making a huge difference on college and university campuses nationwide. And although Business Intelligence (BI) software is the newest find for many US schools, many of these insightful approaches go beyond basic BI tools, which are fundamentally designed to help technologists and administrators turn masses of data into sensible reports. Instead, these newer approaches provide more targeted methods of, say, attracting prospective students or communicating with alumni who donate most frequently. These newer tactics organize business intelligence in a way that benefits users across the institution.

Enrollment Modeling

Nobody said attracting the most qualified students was easy. The first hurdle is the cost of getting the "right" students interested—a process that can run into six figures before a single marketing pitch is made. According to a recent report by **Marquette University** (WI), for instance, the school recently shelled out nearly \$200,000, or \$3 per brochure, just to get its annual average of 65,000 brochures out the door. Compounding the problem of

Campus visionaries are blazing **predictive marketing** trails in areas from enrollment to development—and their institutions are reaping the many benefits.
By Matt Villano



“Value increases as you get more specific about your data and your marketing groups.”

—On Amir, Rady School of Management, UCSD

“finding” students is the rise of online applications and the preponderance of low application fees: More students are applying to schools than ever before, making prospect pools virtually unmanageable. To cope with these issues, many schools routinely resort to a funnel approach, buying tens of thousands of prospect names and mailing expensive direct mail pieces to attract interest. Yet, the challenge of sifting through endless data continues to daunt campus marketing professionals.

The newer enrollment modeling approach to database marketing identifies the key characteristics of enrolled students, allowing a school to determine the likelihood of prospects and inquirees to enroll. It’s actually predictive enrollment modeling that uses student characteristics to build a statistical model that assigns a score to each prospect or inquiry. With this approach, Lawrence Henze, managing director of Blackbaud Analytics (www.blackbaud.com/products/prospectresearch/bba.aspx), says

schools can target their marketing efforts to those prospects who are most likely to respond, saving costs and ensuring admission departments meet their enrollment goals (see box below).

“The reliance on large numbers is reduced when there is a strategic enrollment system in place to guide prospects through inquiry, application, admission, and enrollment,” says Henze, whose company is a new division of the software firm Blackbaud (www.blackbaud.com). “Many schools may find they can cut their initial search purchases when they target prospects using enrollment modeling.”

How does such modeling work? Vendors such as Blackbaud, Datatel (www.datatel.com), SPSS (www.spss.com), and SAS (www.sas.com) each have different products that boast proprietary algorithms, but in essence, all of the approaches revolve around a 1,000-point scoring system that grades prospects on the likelihood they will enroll. The scoring matrix awards points based upon characteristics such as geography, grade point average, and average household income (these characteristics vary by institution). Once the grades are assigned, prospects with high scores (generally in the range of 700 to 1,000) receive diligent communications, while prospects with lower scores become secondary priorities, and prospects with the lowest scores are dropped from the radar screen altogether.

According to Henze, higher education institutions using predictive enrollment modeling enjoy a number of advantages and cost savings. First, by targeting applicant pools, schools can identify the best enrollment prospects by geography, gender, ethnicity, field of study, academic standing, or other characteristics, targeting recruitment efforts

▶ **Leading by Example**

THE LOCATION OF SKIDMORE COLLEGE in Saratoga Springs, NY, a city of about 26,000, imposes challenges on marketing some of the 35 summer programs that the school offers every year. Without a significant local base to draw from, the school has to be more intentional and strategic in its marketing, making sure it targets its approach to get the greatest enrollment for the money it spends. With a new strategy for managing its database, Skidmore may do just that.

The new strategy, unveiled in part this past summer, is a combination of predictive enrollment modeling and permission-based marketing. The system seeks to include information about anyone who’s had any kind of relationship with the college—from youngsters who come for sports camp, to alumni who’ve been donating for years. Every year, the school weights certain criteria associated with this information and pulls the highest scores, to determine who will receive direct marketing efforts. An example: the Science Institute for Girls. In the spring, Jim Chansky, director of Summer Sessions and Summer Special Programs, gets a list of alumni who have daughters between the ages of 12 and 15. If a girl—or her parents, for that matter—ever publicly expressed interest in science of any kind, the child is added to the “high priority” list and receives marketing material immediately. If the school doesn’t know much about her, she’ll receive nothing, or will receive information further down the line.

“The idea is that these are people who have an existing relationship with the college and might be interested in knowing what kinds of other things they can do with us,” says Chansky. He notes that by expressing interest in the college, prospective students are giving their permission to be part of a marketing effort down the road. “In many cases, we start compiling information on a prospective student when he or she is very young.”

So far, on just the limited rollout, Chansky says results of the new approach have been phenomenal. For starters, he says that the more targeted approach has enabled him to slash marketing costs for the program from \$25,000 each summer, down to \$5,000. Beyond that, he says with the amount of money the school is making from increased enrollments, the school should earn back the \$100,000 it spent on the new system by the end of this year. Now that’s ROI.

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to those students who are most likely to enroll. Second, he says, schools can save money on postage and printing by distributing communications more effectively, and save time and effort by making sure that admissions staffs are focusing only on those students who are likely to come to the school and matriculate.

Abilene Christian University (TX) has been using predictive enrollment modeling to assist in market segmentation to build and enroll better pools of students since 2000. According to a

universities tackle the chore of cleaning data so that they have the most current information for alumni. This segment, the "address reclamation" niche, is now well established, and vendors such as Market Data Retrieval (www.schooldata.com), Cleanlist (www.cleanlist.com), Business Credit Information (www.2bci.com), and Melissa Data (www.melissadata.com) have been pivotal in helping schools manage their data. What is new, however, is the theoretical notion of applying standard Customer Relationship Management (CRM) standards to a group

that some of [their] marketing actions have a more enduring impact on [their] customers, which in turn implies a different marketing strategy."

As Netzer explains, his method takes CRM to a higher level. Using the wealth of data from these programs, the Netzer approach lets schools a) segment their alumni according to what kind of relationship they have had in the past, b) determine how the relationship changed over time and where it is heading, and c) calculate which marketing actions are most likely to move alumni to a higher



"The most successful business intelligence is a 'business first, technology second' endeavor." –David Wells, Director of Education, TDWI

2003 report published by the *Journal of Marketing for Higher Education* (vol. 13, issues 1 / 2) which compared Abilene's first year of predictive enrollment with the previous two years, ACU received 25 percent more applications and increased enrollment by 10 percent, with between 22 and 40 percent more applications coming from the core segments the university wanted to grow. Bart Herridge, the school's director of Enrollment Planning and Research, told the *Journal* he was delighted with the results.

"We saw predictive modeling as an opportunity to create an inquiry pool shaped like we wanted," he was quoted as saying. "[It] allowed us to leverage our costs while dramatically increasing the quantity and frequency of direct mail and telecounseling efforts to those students in our inquiry pool who were most likely to enroll."

Theoretical Approaches

Marketing to alumni and prospective donors presents whole new sets of challenges to the campus marketer. In fact, entire technology segments have sprouted in past years to help colleges and uni-

versities tackle the chore of cleaning data so that they have the most current information for alumni. This segment, the "address reclamation" niche, is now well established, and vendors such as Market Data Retrieval (www.schooldata.com), Cleanlist (www.cleanlist.com), Business Credit Information (www.2bci.com), and Melissa Data (www.melissadata.com) have been pivotal in helping schools manage their data. What is new, however, is the theoretical notion of applying standard Customer Relationship Management (CRM) standards to a group

of alumni, treating these prospective donors more as long-time family members than as occasional friends. Results of research in this area are surprising. At **Columbia University (NY)**, for instance, Assistant Professor of Marketing Oded Netzer has developed a method to assess how an entire sequence of a school's marketing actions, and other contacts with alumni influence alumni donating behavior. Using a sample of 2,000 alums from **Stanford University (CA)** over a period of 26 years, Netzer's model determines the evolution in the relationship between the alumni and the university, the impact of development activities such as reunions, and the donating behavior of alumni in general. By establishing patterns of donation behavior from the donation database, Netzer has developed a new way to estimate donations, a schematic marketers can use accordingly.

"Previous methods were limited in their ability to bring together all customer-brand touchpoints, and therefore are less accurate in predicting long-term customer behavior," says Netzer. "Applying this new method, [schools] may find

level of relationship and donation. The approach also provides a marketing strategy decision-support system that predicts the effects of different actions on different types of customers, over time.

Embracing the notion of taking a broader approach to database marketing is On Amir, a professor of Marketing in the brand-new Rady School of Management at the **University of California-San Diego**. Like Netzer, Amir emphasizes the need to optimize the types of data a school is keeping on its constituents. In a candid interview, he says that for the greatest return on their investment (ROI), schools engaged in database marketing always should ask themselves the following questions: How old are constituents? What are they interested in? Do they prefer personalized messaging? How many different types of groups exist? Amir notes that with more advanced databases, schools could even attempt to assess emotional and personal attributes such as what time of year an alumnus is most likely to donate, or what kind of attachment a prospective student feels for the institution, from the beginning of the campus/student relationship.

"The trick in marketing is that you want to create the most value you could have, with long-term ROI," he says. "That value increases as you get more specific about your data and your marketing groups."

What's Next

Looking forward, database marketing experts see challenges ahead for colleges and universities that plan to leverage data to get more of a return on their marketing dollars.

First, schools using predictive enrollment modeling or more adventurous approaches like Netzer's are few and far between. Second, while a majority of colleges and universities rely on BI software to report historical data, the online analytical processing (OLAP) component of this software is frequently ill-equipped to guide prospective decisions.

But another big issue with BI is *where* to put the software programs to make them most valuable. David Wells is director of Education at The Data Warehousing Institute (www.tdwi.org), which provides education, training, certification, and market research for executives and business intelligence professionals worldwide (TDWI is a sister organization of this publication). Wells says academic technologists can't seem to figure out whether business intelligence programs should report to IT, university administrators, or the academic side. The most successful BI engages the business, and is a "business first, technology second" endeavor, he explains, adding that the optimal structure removes the organizational separation of business and IT for those engaged in business intelligence work, creating an organization where business knowledge and technical knowledge are contained within the same business unit and frequently within the same individuals.

This approach doesn't have to involve major restructuring; on the contrary. Wells suggests that schools create the BI organization as a federation of skills and knowledge, with everyone working toward the same goals, the same purpose, and with shared accountability for

effectiveness and value.

"In typical universities, information technology skills are found both centrally and dispersed throughout academic and administrative departments," he says. "It's best to comprise a federation of people, knowledge, and skills that encompass academics, research, university administration, and IT."

Another challenge for higher education institutions pursuing database marketing is applying the concepts of Enterprise Data Warehousing from the start, recognizing that "one size fits all" analytics for the entire institution might not be the most efficient way to approach a database. Here, Wells notes that most large universities are not single enterprises, but conglomerates of many. Technologists at the **University of Washington** understand this reality perfectly. In addition to the undergraduate

and postgraduate programs, the school runs two hospitals, and is the second largest recipient in the nation of Department of Defense research grant funds. With this in mind, the school actually operates as three distinct enterprises—education, research, and health care. Each "enterprise" has its own data warehousing effort, which means that each also takes responsibility for its own database marketing.

"When it comes to database marketing, particularly in higher education, half the battle is making sure that you've got enough control of your resources to make it worthwhile," Wells observes. "What you do from there is up to you." **CT**

Matt Villano is a CA-based freelance writer, and senior contributing editor of this publication.

► Targeted Marketing Gone Too Far?

COLLEGES AND UNIVERSITIES AREN'T the only ones dabbling in database marketing. This June, the Pentagon quietly announced plans to create a database of the names of every college student and many high school students as well. According to the government, the purpose of the database is to help market the US military and aid in recruitment efforts at a time when soldiers are in short supply.

The data will be managed by BeNow (www.benow.com), one of many marketing firms that use computers to analyze large amounts of data to target potential customers based on their personal profiles and habits. According to the official notice of the program, the purpose of the database is to "provide a single central facility within the Department of Defense to compile, process, and distribute files of individuals who meet age and minimum school requirements for military service."

The release indicated that the database would include those students who have taken the Armed Services Vocational Aptitude Battery (ASVAB) test; those who have responded to various advertising campaigns since July 1992 seeking enlistment information, and current military personnel who are on active duty or in the Reserves. The document also noted that the database will include individuals who are in the process of enlisting, as well as those individuals who specifically have asked to be removed from any future recruitment lists (for related information, go to www.defenselink.mil/privacy/notices/osd/DHRA04.html).

Privacy groups were quick to label the database a violation of the Pentagon's own privacy rules and are saying that it would needlessly risk students' rights. Almost immediately, the Electronic Privacy Information Center (www.epic.org) filed a lengthy complaint about the database, calling it an "unprecedented foray of the government into direct marketing techniques previously only performed by the private sector."

In general, timing for the announcement couldn't have been worse. The proposal comes amid considerable controversy over a proposed Department of Education database on students that would allow government officials and educators to track the progress of students throughout the educational system.

CAMPUS/VENDOR PARTNERING

The WIN-



Ultimate WIN

By Matt Villano

Think out of the box about **CAMPUS/VENDOR PARTNERSHIPS**: They could solve your technology purchasing and implementation woes, but they could also help you develop and market your own technology, raise funds for your campus, even park your car.



Ah, teamwork. It's the secret to all great sports teams, the recipe for just about all of humankind's greatest accomplishments. In the world of academia as well, teaming and forging partnerships for success is no less crucial. And while it's true that some colleges and universities have the resources and wherewithal to innovate independently, they represent only a handful of the 4,000-plus institutions of higher ed across the country today. To engineer change, the majority of US academic institutions generally have found that they need help from others: statewide systems, consortia, and consultants. And in the case of technology implementation, they need help from technology vendors and solution providers. Three institutions profiled here—the **University of California-Santa Barbara**; **DePauw University** (IN); and **Dutchess Community College** (NY)—have recently turned to solution-provider partners for assistance with groundbreaking IT strategies and technology rollouts. In each case, the partnerships resulted in impressive victories on and off the ledger sheet, and innovations that have dramatically changed daily operations and function on each campus. ▶

A Parked Improvement

Parking revenues are an important source of dollars for many colleges and universities, especially metropolitan schools, but the challenges of on-campus parking are universal as well. The math behind the conundrum is simple: not enough spaces, too many cars.

Until July 2003, such was the case at the University of California-Santa Barbara, one of the largest public institutions of higher ed in the West. With nearly 25,000 students, faculty, and staff members, and only 6,000 parking spots, parking during the weekdays at the central California school was an endeavor that could last nearly as long as a standard lecture. Most of the 30 lots on campus were administered by three manned

kiosks at campus entrances, which meant that users had to wait in their cars at the kiosk to buy a permit, then wait in lines in various lots for available spots. Compounding the problem were those students who refused to stay out of faculty lots, parking illegally and praying to the parking gods that campus parking enforcement officials didn't catch on.

"The situation on campus was pretty bad," admits Tom Roberts, the school's director of Transportation and Parking Services. "We knew there simply had to be a better way."

Roberts set out to find that better way in July 2002, researching alternatives to the kiosk system that would eliminate the long lines they caused and reduce the school's annual expenditure of \$300,000

to staff them. He turned to the International Parking Institute (www.parking.org) for inspiration, and found the names of literally dozens of vendors who specialize in helping public entities such as colleges and municipalities overcome their parking woes. Roberts produced scores of requests for proposals (RFPs) for systems and technology that might help UCSB park its parking problems in the past. Finally, after nearly a year of research, investigation, and competitive bidding, the school turned to two vendors from Canada for a \$1.4 million system that saved the day.

By the beginning of 2003, a transformation was underway. The first phase of the solution revolved around 50 solar-powered pay stations from Vancouver-based Digital Payment Technologies (www.digitalpaytech.com). DPT installed the pay stations on campus and set up wireless access points to link them together over a campuswide wireless network. The second phase of the project focused on expanding the convenience of electronic payment into the hands of every parker. To accomplish this, Verrus (www.verrus.com), another Vancouver firm, worked to merge UCSB's physical pay station approach with software that enables users to pay for parking remotely, from any standard mobile device.

Today, the systems work together seamlessly. Campus drivers park their cars, note the space numbers on their parking spaces, and settle up at a pay station or from their phones, via a toll-free number. To pay, users simply enter their parking space number and select the amount of time they think they'll need to park. At the machine, users pay by cash, credit card, or debit account through their student ID card. Via cell phone, parking is automatically billed to a credit card (users must first register online). When a user's parking time is about to expire, he can go to any pay station on campus and add more time. If the user paid by cell phone, he will receive a text message five minutes prior to expiration, asking him if he wants to extend the time.

Behind the scenes, all parking transaction information is stored in DPT data-

► Partnering for Dollars

A new online auction vendor helps schools raise money fast.

Historically, when schools needed to raise money online, they could do it independently, or by outsourcing, with the help of an auction management firm. Now, however, there's a third option: partnering with Cambridge, MA-based cMarket (www.cmarket.com), a fledgling firm that provides the templates and Web space for a school's online auction. The company also provides easy-to-fill-out templates for helping an institution create its own auction Web site, catalog, and e-mail blasts that it can then extend to its constituency. In general, schools are responsible for all the content on the site—catalog items, sponsorships, and more. All cMarket does is provide the engine for fundraising.

"We're about putting your auction into the inbox of your constituents," says Greg McHale, founder and executive VP of the firm. "Our whole goal is to make it easier for schools to run fundraisers on their own and establish additional streams of revenue."

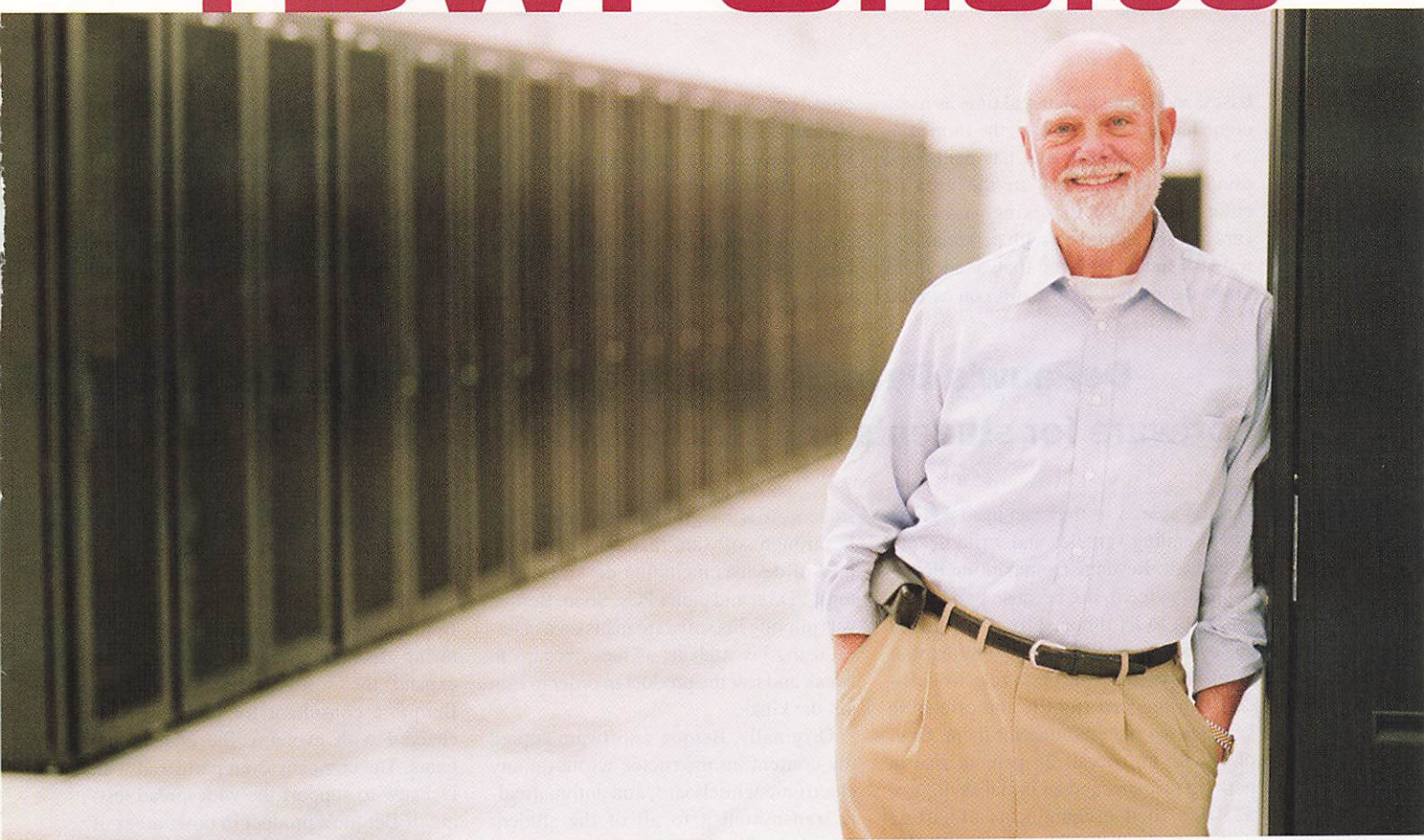
As McHale explains, this kind of campus/vendor partnership is not hard to fund—financing is built in: cMarket takes a cut of the net profit after cost, which usually works out to be between 5 and 9

percent, depending on what a school raises. Importantly, the organization doesn't take any cuts from sponsorships schools collect, an aspect that makes the cMarket alternative quite a bit cheaper than managing an auction through an auction site like eBay, which takes roughly 10 percent.

The company also extends to schools the benefits of its relationships with other vendors, a feature called "cMarketplace" which provides high-ticket items at a reduced cost to nonprofits. If a subscribing school doesn't sell these items, the school doesn't have to pay for them; they're simply returned to the vendors. Hannah Croasmun, Special Events & Donor Research coordinator for Dwight Hall at Yale University (CT), says the marketplace option simply makes the cMarket service flexible.

"We did not bring in as much money as we originally hoped, but we did raise enough to substantially help our budget," Croasmun says. "The good vibes from those who had participated convinced us that this could be a good special fundraiser for us throughout the year." Bake sale and car wash organizers, watch out.

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bases, and is updated in real time as users come and go. Roberts says the immediacy of this system design has paid huge dividends, particularly in the area of enforcement. UCSB parking patrol officers are now equipped with personal digital assistants (PDAs) that send them up-to-the-minute information on expired

com) developed in a far different environment. It all started in the late 1990s, when Dave Berque, a DePauw professor of computer science, set out to find a way to get students to do more in class than simply take notes. Berque hit the drawing board and developed prototype pen-based software designed to allow teachers and

students, I realized that interactivity was only part of the equation," says Berque, looking back. "In order to keep students involved, you first need to be able to make sure they're paying attention to you."

Finally, in 2002, a DePauw alum caught wind of Berque's technology and decided to finance the software to build a

DePauw's Dave Berque developed prototype pen-based software for students and teachers; DyKnow took it to market.

parking spaces so they can head right to the offending vehicles and write tickets. The result: Revenue from parking tickets is up 20 percent, not because parkers are more apt to let time expire (it's actually easier for them to prevent time expiration), but because the parking patrol officers can proceed right to the offending vehicles, without hunting for them. Coupled with an overall 26 percent rise in parking revenue, and an initial savings of \$250,000 (both in equipment and staffing dollars) from closing the original kiosks, Roberts says the success of the campus/vendor partnership has exceeded his wildest dreams.

"When I wrote the bid spec, I had no idea we could get something that actu-

ally made parking on campus easier," he says, adding that between savings and expenditures, the system will have paid for itself by March 2006. "But thanks in a large part to those two vendors from Canada, this implementation truly has been a wonderful surprise."

PARKING PARTNERS

UC-Santa Barbara teams with two Canadian vendors for a wireless parking solution that dramatically cuts staffing, slashes equipment expenditure, boosts parking revenue, and eliminates campus parking tie-ups.

ally made parking on campus easier," he says, adding that between savings and expenditures, the system will have paid for itself by March 2006. "But thanks in a large part to those two vendors from Canada, this implementation truly has been a wonderful surprise."

Knowledge Is Power

While the UCSB partnerships emerged out of necessity, the relationship between DePauw University and educational software vendor DyKnow (www.dyknow.com) developed in a far different environment. It all started in the late 1990s, when Dave Berque, a DePauw professor of computer science, set out to find a way to get students to do more in class than simply take notes. Berque hit the drawing board and developed prototype pen-based software designed to allow teachers and

students to solve problems collaboratively through software that works across a host of devices including desktops, laptops, PDAs, and tablet PCs. Soon, Berque was piloting his software in his own classes, using his students as focus groups to tweak and test the product in order to iron out the kinks.

Originally, Berque's software copied the content an instructor wrote on any electronic whiteboard, and automatically transmitted it to all of the student machines. Berque figured that students could add value to the notes by saving them, playing them back, and learning through the process of repetition. Over time, however, the program evolved naturally. In more recent iterations, for instance, instructors can pose problems to the students, and students can use their pens to sketch or detail solutions in real time. Another feature, DyKnow Monitor, allows instructors to limit the applications students can run during class, or even "blank out" student screens, if there is a need to do so. In this age of Internet surfing and instant messaging, the goal is to minimize distractions (now a critical issue) and help students focus on the subject at hand.

"As I tried the software on my own stu-

company around it. The company, Dynamic Knowledge Transfer LLC, or DyKnow (based not far from DePauw in Indianapolis) licensed the program from Berque and began preparing it for market, hiring technologists to improve and expand the software here and there. Berque a consultant for DyKnow, was charged with evolving the educational focus. The company even partnered with DePauw to support the widespread testing of Berque's product in other areas of the university—in economics, for instance, to help students with graphs, and in Japanese language classes, where stroke-by-stroke replays of Kanji characters help students understand how to construct the symbols.

The following year, the company released a two-pronged commercial iteration of the product known as the DyKnow Software Suite. Under the terms of the relationship, DyKnow committed to continue to work closely with DePauw to improve the software every year, an arrangement that benefits both entities: DyKnow gets valuable data from its users about how the software works, and DePauw students get to use the software in class, free of charge. Other benefits of the partnership include constant input and feedback to the DyKnow team from DePauw students and faculty, beta testing of future releases of DyKnow at DePauw, research projects at DePauw that can inform DyKnow project development, internships and full-time job opportunities at DyKnow for DePauw students,

and hosting DyKnow user group meetings at DePauw.

Other schools now take full advantage of the primary DePauw/DyKnow partnership, developing campus/vendor partnerships of their own; and DyKnow Software Suite deployments—some enhanced with \$80 digital graphics tablets—are now found in learning environments at elementary, secondary, graduate, and post-graduate levels in many states. Specifically, the DyKnow system has been deployed at college campuses of varying size, on various hardware platforms, including standard desktop and laptop computers (sometimes augmented with graphics tablets), on video tablets, and on tablet PCs. Today, Berque says he “can’t believe” how far his software program has come, and hails his relationship with DyKnow as a key accelerator for the application’s enthusiastic acceptance in the world of academic technology.

“Although I was able to prototype precursors to the software while working at DePauw, the current commercial system goes far beyond what would have been possible to develop and support without the backing of the experienced and professional team at DyKnow,” he says. “In my opinion, research teams comprised of university faculty and students are effective at researching new ideas and prototyping solutions. However, the development, maintenance, and support of a commercial product require corporate backing.”

Procurement Help

In the world of higher education institutions, growth is generally a good thing, but it often presents unwelcome complications. Officials at **Dutchess Community College** (NY) found themselves faced with such a paradox recently when, after years of escalating enrollment, the school’s IT systems were tottering under an aging technology infrastructure that lacked the storage capacity to handle new applications and the large number of users needing to access them. The problem came to a head in September 2004, when a critical server crashed and faculty members

couldn’t access their files for a week. No data was lost, but faculty frustration with the infrastructure was at an all-time high. DCC officials knew they had to act quickly to find a long-term solution and prevent the same kind of debacle from occurring again.

Campus officials got to work immediately. Recognizing that the technology issues surrounding the college’s growth would not go away, they worked with IBM (www.ibm.com) to complete an IBM Total Cost of Ownership (TCO) solution workshop to understand inherent

few months, the CDW-G account team worked in tandem with IBM to help DCC select the best technology solutions to meet its needs. Together, the organizations chose 14 IBM XSeries servers to replace DCC’s aging boxes, and opted for four Cisco 1200 wireless access points (www.cisco.com), as well. DCC also standardized on IBM ThinkCentre workstations, Lexmark (www.lexmark.com) and HP (www.hp.com) printers, as well as NEC (www.nec.com) data projectors, all through CDW-G.

With CDW-G’s help, DCC was able to

PROCUREMENT PARTNERING

When **Dutchess Community College** needed technology product and installation guidance to revamp an aging infrastructure, they partnered with a technology sourcing champion for practical—and invaluable—help.

costs and how to prioritize relevant activities. Through this process, DCC officials concluded they needed to replace the switches, routers, cabling, and servers attached to the institution’s data communications network, as well as switch the school’s aging operating system to a new one from Microsoft Corp. (www.microsoft.com). In addition, school officials planned to migrate administrative functions (including purchasing, student accounts, financial aid, and registration) to the SunGard SCT Banner enterprise resource planning (ERP) software suite (www.sungardsgct.com).

“We knew exactly what we wanted to do with our infrastructure,” says Jay Simpson, the school’s director of Telecommunication. “For us, the big problems were that we didn’t know what specific technology we needed, and we didn’t know how to go about getting the technology for our people to install.”

Simpson and his colleagues found an answer to those questions in CDW-G (www.cdwg.com), technology products and services provider to government and education. Representatives from the company came to campus in May 2004 and sat down with DCC officials to hammer out a procurement and implementation strategy for the future. Over the next

complete the hardware installation four months after the project began. Today, the college is deploying the new IBM desktops and, across campus, is migrating from its earlier systems to Microsoft. So far, say school administrators, the new infrastructure has worked wonders, facilitating a common storage area that allows faculty and students to save large files centrally. In addition, the new network allows DCC to improve security by keeping student traffic isolated from the administrative traffic on the network through separate Virtual Local Area Networks (VLANs) that map workstations by type of user. According to Simpson, the infrastructure also has ushered in hot new high-bandwidth applications such as streaming media to improve teaching and collaboration on campus.

“Ultimately, we’d like students to be able to go to our streaming media catalog, click on a title, and immediately be able to stream video to their PC,” says Simpson. “We could never even think of doing something like that without the help of vendor partners to make it all come to life.” **CT**

Matt Villano is a CA-based freelance writer, and senior contributing editor of this publication.

[Part 7] Information Technology Security

Common-sense advice on the big-picture security issues college presidents and their administrators should be thinking about now—*before* they see their institution in the headlines. by Thomas Keith Meier

Some college presidents are well-versed in many of the internal aspects of information technology, while others, like me, merely admire the many benefits it offers. However, recent widespread and well-publicized security threats, as well as the opportunity to contribute this chapter, have raised my own level of awareness of information technology (IT), and I wish to thank two of my tutors in the field who are the principal contributors to this discussion: Scott Lowe, director of Information Technology, and Michael Rogers, director of Communications, both at Elmira College (NY).

There was once a day when a college could connect its campus—along with every student—to the Internet, and not have to worry much about security. The primary threat was from students who attempted to hack the college administrative systems in an effort to boost their (perhaps lackluster) grades. Those days are gone.

Of course, a college still needs to worry about the occasional computer-savvy underachiever, but today's threats to campus information security are much more serious and sophisticated. Among the threats to college campuses today are:

► **Identity theft:** a crime in which an imposter gains access to someone's personal information and uses it to impersonate the innocent victim. This crime is of particular concern to college campuses, either due to historically lax policies or the use of unpro-



tested social security numbers as student identification numbers.

► **Hacking and data theft:** a crime in which a person gains unauthorized access to key systems, and steals sensitive data. This is sometimes followed up by actual identity theft.

► **Viruses and spyware:** Viruses have been around for a long time, but spyware—generally, tracking software that watches what users do and reports activity to a home base—is a relatively new phenomenon that can have serious security consequences if left unchecked.

Because of these issues and the explosion of all things Internet, IT security has quickly moved from a back-burner, “would-be-nice-if” task to a critical and ongoing investment

for any campus that relies on technology for its services. Information security often is compared to a war in which the allies need to stay one step ahead of the enemy. Presidents and other senior leaders must take steps to ensure that the college is always one step ahead. What are some ways to achieve this evermore elusive goal?

IT Security Goal: One Step Ahead

Probably the most important security goal is identifying the campus risk areas. Most college administrators have read about the unfortunate situation at **George Mason University** (VA) in early 2005. In short, attackers gained access to sensitive campus systems and may have snatched as many as 30,000 personal student and employee records, including social secu-

ber to track the request. Further suppose that the institution still is using social security numbers as a student identifier—the conclusion is obvious.

Second, institutions need to make sure they have the appropriate policies in place and that those policies are enforced. For example, does the campus have an acceptable use policy as well as an enforced password policy? If not, those policies should be in place, and IT must have the means and the authority to enforce them. For help creating or revising such policies, Educause and the Cornell Institute for Computer Policy and Law have compiled hundreds of information policies from dozens of campuses and made them available on the Educause Web site at (www.educause.edu/EDUCAUSECornellInstituteforComputerPolicyandLawHome/863).

a “need to know.” Unfortunately, every person with access to a key system becomes a potential threat to the institution’s information security.

Some universities provide inappropriately wide access in the mistaken belief that to limit access is to communicate that the institution distrusts its own employees. With today’s high stakes in IT, common sense dictates restricting access. After all, colleges do not make explosive laboratory chemicals or the institution’s checking accounts available to everyone on campus.

Another part of an information security policy should detail exactly what kind of data is stored and why. For example, colleges may need to store social security numbers for financial aid reporting, but are they storing other information that leaves the institution at even greater risk?

“Some universities provide inappropriately wide access in the mistaken belief that to limit access is to communicate that the institution distrusts its own employees.”

ity numbers. This is not the kind of publicity that any institution seeks. In this case, one major risk area for George Mason was its administrative system’s use of the social security number as a student identifier. Ironically, the university was in the process of converting to an unrelated student identifier at the time of the security breach.

Key areas that need to go through a risk analysis include administrative servers, e-mail systems, institutional desktops, and the student residential network, for a start. The simple truth: Every area on campus that has stored electronic information needs to be secure. Even the office computer in the Department of Buildings and Grounds could be a risk. How? Consider this: Suppose a student submits a request to Buildings and Grounds and that department uses the student ID num-

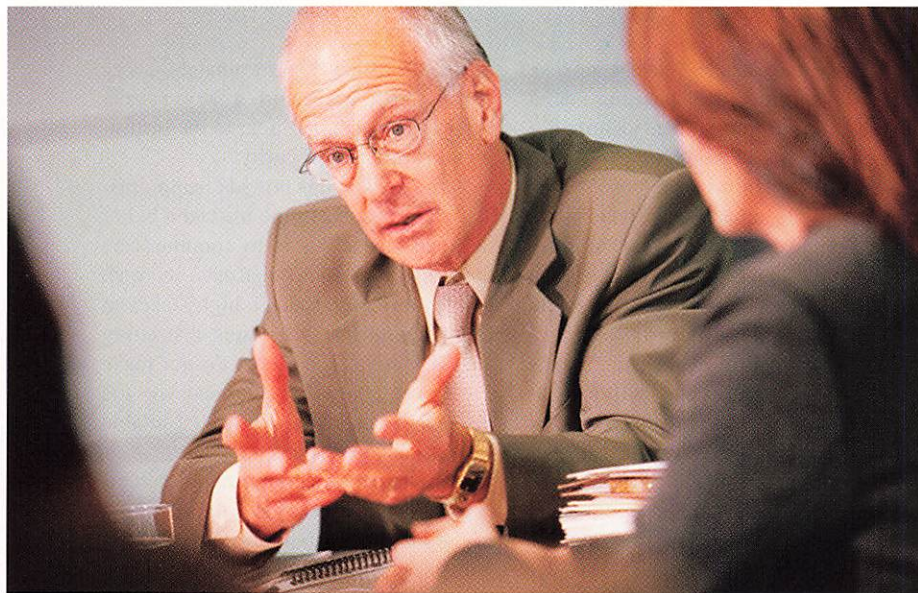
Target Student and Employee Threats

A study conducted by the US Secret Service and the Carnegie Mellon Software Engineering Institute (www.sei.cmu.edu) found that 78 percent of computer crimes carried out at financial institutions were accomplished by authorized users—that is, users who had the right to access the affected systems. While not operating a financial institution, colleges and universities do house information that is compelling for data thieves, including social security and credit card numbers.

An information security policy should limit access to key systems to only those who require access in order to perform their jobs. Too often, campuses provide access to almost every system to every employee—without determining who has

Maybe it doesn’t have to be that way. For instance, instead of storing student credit card numbers for tuition payment, one might consider outsourcing this activity to a competent third party with a security infrastructure designed to handle this kind of activity, thus avoiding the liability of storing credit card numbers.

A further feature of a solid security practice lies in the technology the college uses. To implement effective security policies, the technical environment must, of course, be conducive to security. Not very long ago, this meant placing a firewall (a device that blocks unwanted and uninvited visitors from the Internet) between the campus network and the Internet. With this firewall in place, the theory went, unauthorized visitors could not gain access to critical information systems and cause damage. Today, while



a firewall is still critical, it is but one cog in the security wheel. There are additional hardware and software components that are required to protect systems.

The first technical solution relates back to the point made earlier about the judicious control of access to key systems. One should make sure this is enforced through a technical solution as

tant to preventing problems. Some viruses take advantage of vulnerabilities on the computer to allow access by a third party. By keeping the virus away, one also keeps the third party away, so institutions should insist on a current virus scanner *across the board*—on all institutional machines, as well as on all student computers, without exception.

even consider having an IT staffer whose responsibility it is to question, learn, and advise the campus community about potential security threats. After all, the college is most assuredly not the last place in which students will need to be armed with knowledge they can use to protect themselves from fraud. On the oversight front, consider contracting with a third-party company that performs information security audits. The results of such an audit can help quickly identify weak areas in information security infrastructure and may avoid serious problems.

IT has become a strategic component for many campuses. Along with the benefits of IT inevitably come the dangers, including the security threats outlined here. Using some of the information discussed herein, college leaders could certainly reduce the risk of succumbing to security threats—and keep their institutions out of the headlines. **CT**

Thomas Keith Meier has served as the 12th president of Elmira College since 1987. Previously, he was the 17th presi-

“Institutions should insist on a current virus scanner across the board—on all institutional machines, as well as on all student computers, without exception.”

well. For example, on some campuses, student computers can “see” key administrative servers, but the students do not have accounts to access these systems, so they may be deemed “safe” when in fact they are not. For every key system on campus, ask the question, “Who needs to access this service?” and make sure that IT takes the technical steps necessary to lock others out. In the example above, no student computer should even be able to see an administrative system.

The seemingly mundane task of keeping virus scanners current also is impor-

Education and Oversight

The final areas on which to concentrate security efforts lie in education and oversight. Educate users about the risks of lax practices, such as writing passwords on sticky notes and posting them on their monitors, and about sharing passwords with others. A password shared with the wrong person can lead to data theft that could make the institution a case study in systems security mismanagement. Make sure the IT staff has the skills necessary to keep the university’s information safe. One might

dent of Castleton State College (VT) for eight years. SunGard SCT (www.sungardscs.com) is publisher of President to President: Views of Technology in Higher Education (2005), from which this article is excerpted, and is corporate sponsor of the New Presidents program. Marylouise Fennell, co-editor of President to President, is coordinator of the New Presidents program, and senior counsel to the Council of Independent Colleges (www.cic.edu). Scott D. Miller, also co-editor, is president of Wesley College (DE), and chair of the program.

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Innovation on Campus: Speakers in the Spotlight

Syllabus2005

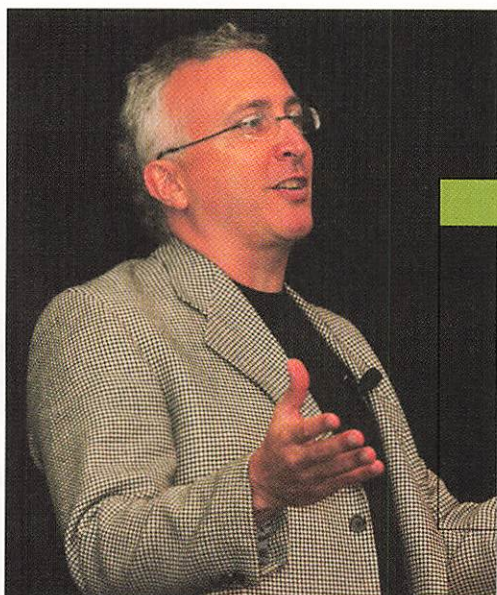


Stars assembled

Hollywood, California was the perfect venue for the 12th annual Syllabus conference, with its theme, "Spotlight on Innovation, Integration, and Collaboration." Boasting five higher education IT stars as keynotes and a cast of more than 150 presenters, workshop leaders, and panelists, Syllabus2005 was a hit with attendees. Keynote Diana Oblinger, Educause VP, explored the expectations of "Net Generation" students.

A full day at UCLA

Campus host Ruth Sabean, associate vice provost and director of Educational Technology at **UCLA**, kicked off a full day of sessions and tours on the UCLA campus.



Reaching out with IT

Case Western Reserve University (OH) VP of IT and CIO Lev Gonick presented his keynote, "From the Digital Campus to the Connected City"—how colleges and universities can collaborate with their surrounding communities on bold information technology projects like Case's OneCleveland. Other keynotes included **University of Georgia** CIO and associate provost Barbara White; **Duke University** (NC) VP for IT and CIO Tracy Futhey; and **UCLA** Associate Vice Chancellor of IT Jim Davis. **CT**

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Security 5600 is a multi-function network security appliance designed to proactively protect against blended threats. The series integrates antispam, antivirus, clientless SSL and IPSec VPN, full-inspection firewall, intrusion prevention, intrusion detection, dynamic document review, and URL list-based content filtering. Price starts at \$4,000. www.symantec.com. **CT**

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Putting the “M” in CMS

Are your systems ready for school?

Elias Eldayrie is turned on to tuning up operational effectiveness of IT systems and services. As associate VP for Information Technology, Eldayrie is respon-



sible for heading up the overall operational functions of the Computing and Information Technology (CIT) unit of the

University at Buffalo, State University of New York, as well as for developing and implementing strategic, tactical, and operational plans for IT on campus.

Eldayrie also chairs the Administrative Systems Advisory Board, which prioritizes IT administrative projects for the campus. And as team leader of the UB2020 IT Strategic Transformation Initiative, he is leading the effort to transform the delivery of IT services, define an IT governance structure and process, and develop a funding strategy for IT.

Here, he turns his operational savvy to the course management system and leads us through his 10 requirements for readiness.

Want to be considered for Campus Technology's Top 10? Send your countdown and a brief background/bio summary to mgrush@101com.com

- 10 Make sure you have documentation for the full system.**
 - This means not only the system provider's documentation, but documentation for all tools, updates, and any course-specific applications.
 - Don't forget to update key information about the owners of courses: In other words, "Who ya gonna call?"
- 9 Maintain staging and test servers to help you manage updates and changes seamlessly.**
 - Ensure that any change to your environment goes through an acceptance testing process.
 - Use the test server to prototype and model changes, and the staging server for acceptance testing.
- 8 Practice good change management.**
 - Make sure all changes to your configuration are logged, and that a rollback procedure is in place.
 - If something goes wrong, the first question should be, "Exactly *what* changed?"
- 7 Understand how many courses and users have been added between semesters.**
 - Verify these numbers with the owners of the courses.
 - Make sure you have enough hardware to handle the increase in usage.
- 6 Know your logs!**
 - Enterprise applications have a number of error and system logs; locate and learn how to use them.
 - Be sure to regularly monitor the logs for unusual events.
- 5 Create backups daily and be ready to use them.**
 - Monitor your environment actively.
 - Practice restore procedures regularly, using the test server.
- 4 Purge courses and records that are no longer in use.**
 - Remember, keeping unused courses and accounts on your system can slow performance.
 - Design and maintain an archive for long-term storage and record keeping.
 - Determine a specific period after which completed courses should be archived.
- 3 Make sure maintenance tasks are scheduled appropriately.**
 - Your maintenance program should be based on routine tasks.
 - It should be proactive; never reactive.
- 2 Have a systematic user-training program in place.**
 - Schedule an adequate number of workshops early in the semester.
 - Highlight new features and provide actual use cases; this will foster better user adoption.
- 1 Participate in your user community.**
 - Seek, record, and share experiences from the user's point of view.
 - Gather resources and tips and disseminate them among the whole community.
 - What's the "word on the street?" Try to become aware of potential problems—*before* they hit you in a big way. **CT**

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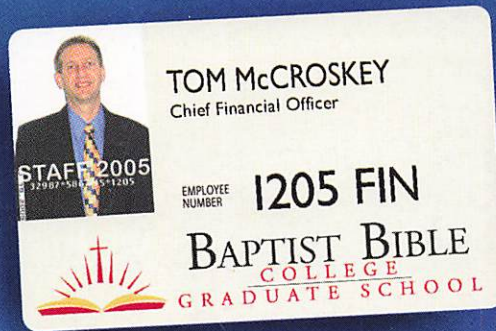
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